

COAL AGE

Vol. 4

NEW YORK, NOVEMBER 8, 1913

No. 19

The Boys of the Rescue Crew

BY BERTON BRALEY

Written expressly for Coal Age

When the damp explodes in a distant room
Or the roof of an entry falls,
Sealing the men in a living tomb
With thick and soundless walls;
When the women crowd at the open shaft
And wail as the women do,
It's then we call for the nerve and craft
Of the boys of the Rescue Crew!

They take the smoke
As a sort of joke,
They dare the fire damp, too:
For it's all their trade
And they're not afraid,
The boys of the Rescue Crew!

They look like divers who tempt the sea,
But they battle with fire instead,
To bring out the living—if such there be—
And search for the huddled dead;
And many's the seething hell they've braved
For the sake of their comrades there,
And many a dying man they've saved
And brought to the light and air!

By day or night
It's theirs to fight
With death itself in view,
And they face their fate,
With hearts elate,
The boys of the Rescue Crew!

There's blame few medals they ever get
And never a hint of fame,
But the miners know their style, you bet
And the way they play the game;
The words of the miners are few and rough
But their thanks and their faith are true,
And the prayers of the women are fame enough
For the boys of the Rescue Crew!

In the heat and murk
They do their work
And they stick till the work is through,
So I boost again
For those dauntless men,
The boys of the Rescue Crew!

Mining Natural Coke and Coal in Virginia

BY JOHN E. AMBROSE*

SYNOPSIS—Description of mining a seam of natural coke in conjunction with three other contiguous seams of coal, at Richmond, Va. These seams have a dip varying from 18 to 45 deg.; the two middle ones are worked together, being separated by only 5 or 6 ft. of parting. Most of the chutes are worked on the battery system, but a few light pitches require sheet iron, to make the coal slide down to the gangway.

*♦

One of the most interesting studies from a geological standpoint is the formation of the natural coke of the Richmond Basin, Va. Some years ago, before the civil war, the mines at Gayton, Henrico County, Va., were operated by slaves, worked by their masters. Slopes were sunk to great depths, and headings or gangways, as we call them in pitching seams, were driven long distances without any aircourses. The mines made fair outputs. The rooms (breasts) were turned directly off the gangways or levels, which were driven at right angles to the slope and about 100 ft. apart. The coal and coke were trammed to the slope turnout or sidetrack where they were hoisted to the surface.

For some reason, the mines were shut down, later, and allowed to fill with water. A few years ago a company

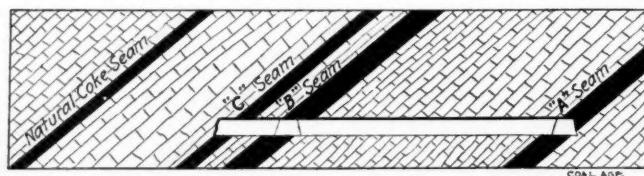


FIG. 1. CROSS-SECTION OF COAL MEASURES, SHOWING THE CROSS-TUNNEL TO REACH OTHER SEAMS

was formed, the water pumped out of the shafts on the upper end of the property and operations commenced on a large scale. This company continued to develop the property until their tipple burned down, when they ceased operations and allowed the slopes and shafts to again fill with water. Recently the Old Dominion Development Co., of Richmond, Va., pumped the water out of the slope opening, which is about 1580 ft. deep, retimbered the slope, relaid the incline with heavy steel rails and, for the third time, active mining operations were resumed in this mine.

The system recently adopted for the operation of the mine may be described as follows: The main hoisting slope is a single-track incline, pitching about 40 deg. at the entrance, and is driven through the overlying strata to intersect the seam, a distance of about 150 ft. Below this point, the slope is driven in the seam on a dip of about 18 deg., until the 1000-ft. level is reached. From that level the seam pitches from 35 to 45 deg., until it reaches the foot of the slope or the 1580-ft. level.

There are three seams of coal besides a natural coke seam. As shown in Fig. 1, the foot of the slope is located in the "A" seam, and from this point a double-track tunnel, Fig. 2, is driven across the measures to intersect the "B" and "C" seams, and will be extended later to tap the coke seam beyond. At the point where the tunnel

intersects the "B" seam, gangways are turned north and south, in that seam. These gangways are timbered with heavy double timbers, the collars being 7 ft. between notches and 7 ft. in the clear above the rail, while the legs have a 10-ft. spread.

The strata between the "A" seam and the "B" seam

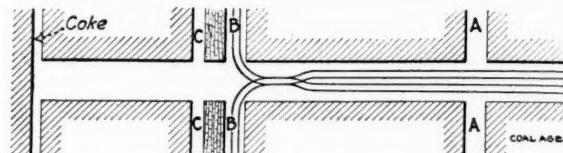


FIG. 2. PLAN OF SLOPE BOTTOM, SHOWING ARRANGEMENT OF TRACKS

vary from 96 to 110 ft. in thickness, while the parting between the "B" and "C" seams is only 5 to 8 ft. thick. From the "C" seam to the natural coke seam, the thickness of the strata varies from a few feet on the south end of the property to 150 and 200 ft. on the north end; although some claim that the "C" seam and the coke seam come together on the north end of the property where the "C" seam is cut out entirely.

The gangways were driven in the "B" seam, because of the fact that only a few feet of slate separated it from the "C" seam. It was found that by working these two seams, room over room and pillar over pillar, the coal could be successfully taken out; but it was necessary to keep the workings in the "C" seam ahead of those in the lower or "B" seam. No gangways or levels were driven in the "C" seam; but, instead, rock chutes were driven up from the "B" seam and the coal in "C" seam was mined through these chutes, as shown in Fig. 3.

Later, however, the gangways were turned from the "B" seam into the "C" seam, as the coal in the latter was found to be of an excellent grade, more or less resembling anthracite. The thickness of this seam varied from 5 to 6 ft. An aircourse was driven in the upper "C" seam

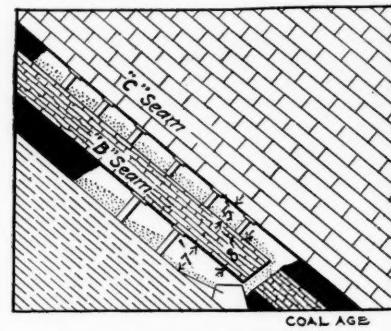


FIG. 3. CROSS-SECTION SHOWING WORKINGS IN "B" AND "C" SEAMS

and the rooms in that seam turned off the aircourse. Where the pitch was light, it was necessary to lay sheet iron in the chutes to enable the coal to slide down to the level or gangway; but where the pitch was heavier, the battery method was used, the chutes being kept full of coal and the miners standing on the coal at the face while at work.

The development work, as far as it has progressed,

*Mining engineer, New Durham, N. J.

shows that the coke seam is thicker at the north end of the property than at the south end. The writer is informed by old miners that this coke seam attains a thickness of 6 to 10 ft. in places. The coal has a ready market, the mine being close to Richmond, and the natural coke being a fuel for which there is a popular local demand. Some consumers claim that it is even better than anthracite coal. The present development work is being pushed with a view to securing a large output in the early future. Much credit is due the management of the company for the energy and push they have displayed in opening up this property. The work has been made harder by reason of the fact that it is difficult to secure competent miners who understand the system of mining employed in working these seams. The coal is all shot from the solid, permissible powders, carbonite or monobel being used.

Where the pitch is sufficiently light, the natural coke seam is mined (undercut). The bottom bench or layer in the coke seam resembles coal and is termed by the min-

ers "coaly." This lower bench, which is from 6 to 9 in. thick, is soft like bituminous coking coal. The floor of the seam is slate. The mining is all done in the "coaly" bench; but it is necessary to "snub off" the front of the coke in order to mine the seam to the required depth. When the mining is complete, holes are drilled in the coke by compressed-air rotary augers. The coke is blasted down and thrown into the sheet-iron chute, which runs to the gangway below where it is loaded into the mine cars.

Mules are used to haul the output to the sidings at the slope, from which point they are hoisted to the surface. The loads are hoisted from the slope in two-car trips and then run by gravity to the foot of the car-haul, by which they are carried up the incline onto the tipple, where they are dumped. The empty cars are run down the incline to a side track, where they are allowed to gravitate to the head of the slope. This arrangement has proven very satisfactory.



The Brush Creek Coal Field in Kentucky

BY JNO. C. MCNEIL*

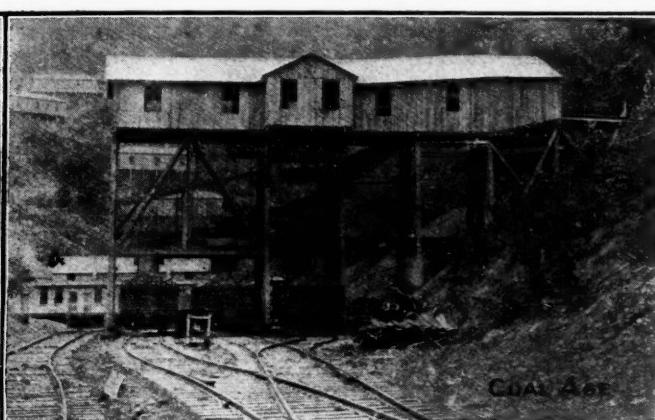
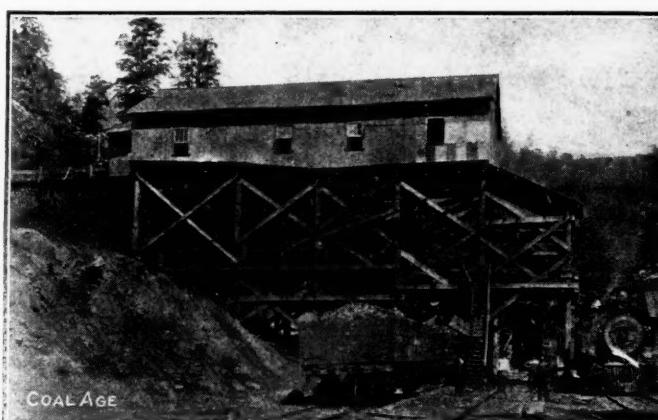
SYNOPSIS—A brief sketch of the development of the Brush Creek field in Kentucky. Production is relatively small as yet but the coal is a popular grade and the indications point to a rapid increase.



The Brush Creek coal fields are situate in Knox County, Ky. and are wholly on the Cumberland Railroad, a short line in operation from Artemus to Wheeler, Ky.

ville, a coal operator of much experience in Southeastern Kentucky. Other plants were opened on the line by Dr. Samuel Bennett, at Bennettsville and Trosper. These operations were known as the Bennett Jellico Coal Co. and the Bennett Coal Co., respectively.

In the early part of 1908, the Geo. L. Carter interests purchased the lease of the Matthews Coal Co., in the Cumberland Coal Co. property and the lease of the Evans



THE CARTER COAL CO.'S WARREN PLANT ON THE LEFT AND THE ANCHOR MINE ON THE RIGHT

and projected to Jellico, Tenn. to a connection with the N. & N. and Southern Railroads.

This field was opened up by a syndicate from Warren, Tenn., who organized the Cumberland Coal Co. and bought up several thousand acres of lands on Brush Creek. The same people organized the Cumberland R.R. to build a railroad line into the field and market the output.

HISTORY OF THE DEVELOPMENT

After installing a large plant at Warren, the company leased their mines to Col. John G. Matthews, of Barbour-

Jellico Coal Co. on the Bennett Coal Co. property. In the fall of 1907, the Bennett Jellico property was leased to the Trosper Coal Company.

In 1911, the Cumberland Railroad was extended up Tye Fork to Anchor and to Wheeler in the direction of Jellico. The Brush Creek Mining & Manufacturing Co. opened a mine at Wheeler and two operations were installed on the Tye Fork Spur by the Anchor Mining Co. and the Dean Jellico Coal Company.

The Carter interest, known in Kentucky as the Interstate Coal Co., later bought the properties of the Cumberland Coal Co. and the Bennett Coal Co. and also acquired large holdings of undeveloped lands. These interests, now known as the Carter Coal Co., control sev-

*Chief clerk to general manager of the Cumberland R.R. Co., Artemus, Ky.

eral thousand acres of coal lands in the Brush Creek field and have also purchased the property of the Anchor Mining Company.

A modern electric plant has been erected at Warren by the Carter interests which supplies the mines at Warren and Trosper, and will later supply the Anchor mine, with power. Coal washers have been installed at Warren and Trosper and loading booms and box-car loaders put in at Warren.

The Trosper Coal Co. have also installed box-car loaders at their plant.

The coal mined on the Cumberland Railroad is known as the Dean seam, which ranges from 5 to 7 ft. in thickness. An analysis of this coal from one of the mines in the Brush Creek field, made by the Kentucky Geological Survey, shows the following:

	Per Cent.
Moisture	2.63
Volatile matter	38.77
Fixed carbon	53.70
Ash	4.90
Sulphur	0.76
Coke	68.60
B.t.u. per lb.	14487

The coal is sold throughout the Northwest by large shipping concerns in Louisville, Cincinnati and Chicago and gives universal satisfaction because it stands stocking so well. It has a firm texture and does not disintegrate under severe weather conditions.

A troublesome feature in the Kentucky coal fields is the recent introduction of the big hopper-bottom "battle-ships." This is in some cases necessitating the reconstruction of the tipples.

The mines now being operated are:

The Dean Coal Co., owned by Knoxville interests; the Trosper Coal Co., owned by Jellico, Tenn. interests; the Carter Coal Co., at Warren and Trosper, owned by Johnson City, Tenn. interests; the R. C. Tway Mining Co., owned by Louisville interests and the Brush Creek Mining & Manufacturing Co., owned by Jellico, Tenn. interests.

The present output of the various mines is about 2000 tons daily. This is being gradually increased and because of the large undeveloped areas connected to the mines and owned by the operators, the Brush Creek field presents large possibilities of becoming a heavy producer in the near future.

* * *

A Chinese Coal Cableway

BY A. GRADENWITZ*

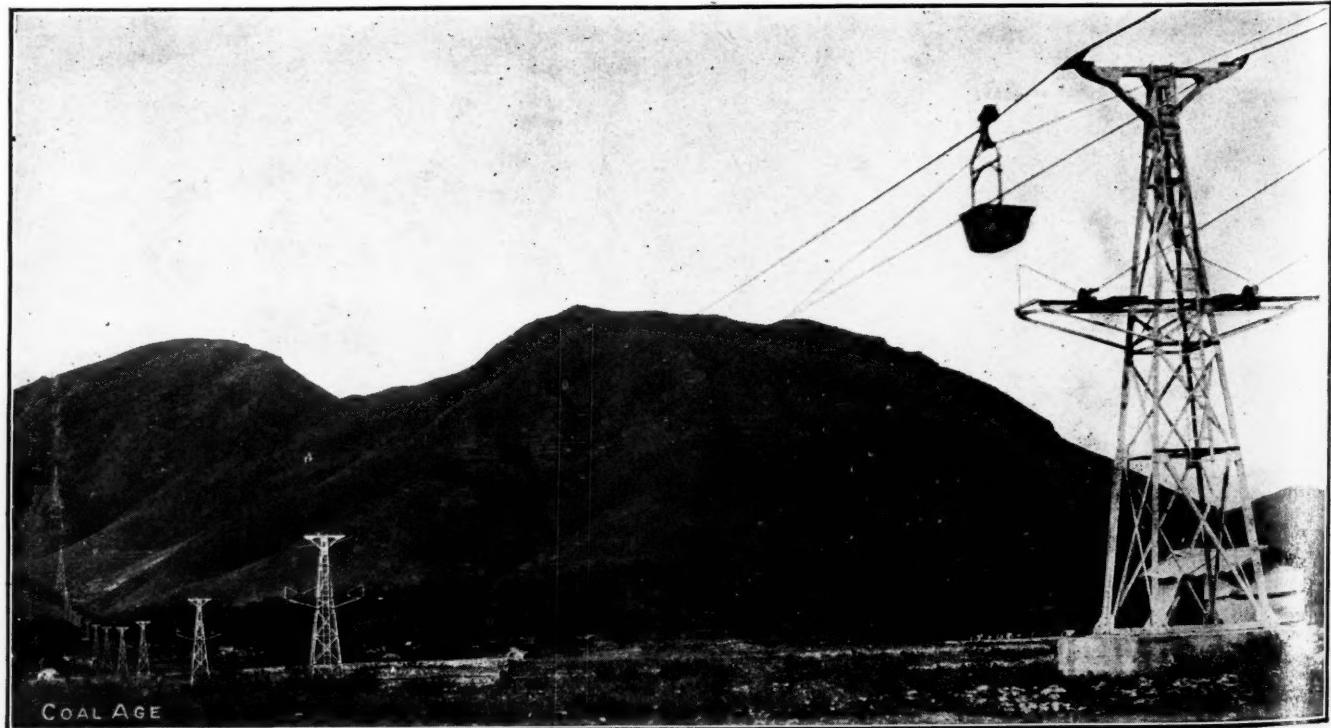
SYNOPSIS—A modern aerial tramway supplanting a continuous caravan of camels and pack mules. Mining is, however, still carried on by the peasants in the most primitive manner, each man or family working independently and employing antiquated hand methods.

♦ ♦ ♦

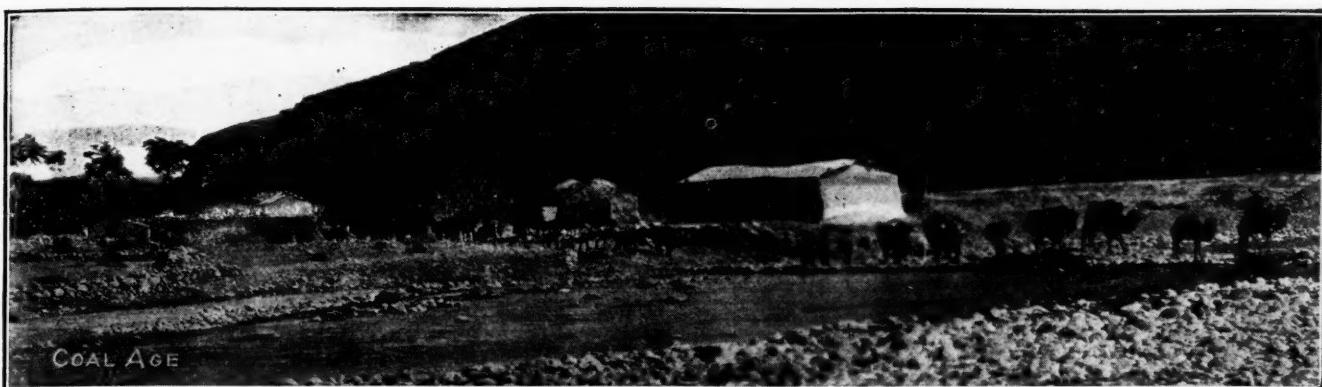
The coal from the mountains to the west of Toli was in former times, the only one marketed in Peking, and was

conveyed to the capital in a rather primitive fashion, by an endless file of camels and mules reaching the whole way back from Peking to the coal mountains. River passages were duplicated, those on one side being reserved for caravans coming from the mountains and those on the other for caravans going in an opposite direction. These passages consisted of dams, comprising intermediate fagot layers, through which the water was allowed to pass.

*Berlin, Germany.



GENERAL VIEW OF LINE IN REAR OF TOLI WITH MOUNTAINS IN BACKGROUND



AN ENDLESS CARAVAN OF CAMELS AND MULES HAS BEEN SUPPLANTED BY THE CABLEWAY

The construction of railways, however, resulted in the anthracite coal from some mines in the neighborhood of Peking being conveyed to the capital and there sold. In order therefore to cheapen the transport and to render its own coal marketable again, the Salt Corporation of the city of Tientsin, province of Petchili, some years ago decided to install a mechanical transporting plant and entrusted Messrs. Adolf Bleichert & Co., of Leipzig, with the construction of a cableway.

Surveying was commenced in the summer of 1908 and the construction of the plant was completed in July, 1911, though some sections had been inaugurated beforehand. Building materials were supplied by rail as far as the railway station of Toli, being thence taken by camels to the building grounds.

THE EXTENT OF THE CABLEWAY

The cableway comprises a first section (Toli I) from the railway station of Toli to the Tienshan transfer station, with an angle station near Natcheung, which at the same time serves as a driving station. Near Chiantshanggu, there has been provided a loading station and near Wangfutang there is an intermediate and driving station. From the Tienshan transit station the line branches out into a section (Toli II), leading across the loading stations of Hoshan, Shinanhing, Pedian (driv-

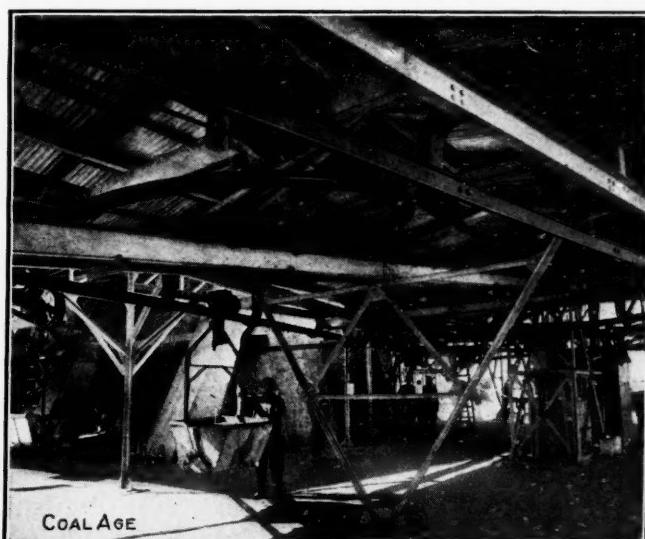
ing station), Fungdia, and Nantze to the terminal and loading station of Chin Chiakon, on one hand, and into a section (Toli III), leading from the driving station of Forzshwang to the terminal and loading station of Hung Mechian, on the other.

The first section (Toli I) is 9.15 km., (about 5.7 miles), the second (Toli II), 7.89 km., (about 4.9 miles) and the third section (Toli III), 7.2 km., (about 4.5 miles) in length, the total length thus being 24.24 km., (15.1 miles). In the first section there is a fall of 142 m., (465ft., 9 in.); the two portions of the second section have a fall of 177.28m. (581ft., 6in.) and 155m. (508 ft., 5 in.) respectively, and the third section at first a rise of 65m., (213ft., 2in.), followed by a fall of 31m., (101 ft., 7 in.). The output of the first (common) section is 50 tons per hour, or about 1000 tons during a 22-hour day and night service, the output on the two other lines being 20-23 tons and 17 tons per hour respectively. These figures are, however, only preliminary.

A total of 439 buckets is operated on the cableway for the transport of anthracite coal, the speed on the first section being 2.5m., (8.2 ft.), on the second section 2.5 m., (in the lower portion) and 1.5m. or about 5 ft. (in the upper portion), and on the third section 2.5 m. per second. For the first section, there has been provided an 80 hp. driving motor, for the second section, three motors of 15, 13 and 6-7 hp. respectively, and for the third section, two driving motors of 25 and 15 hp. re-



THE HIGHEST POINT OF THE LINE



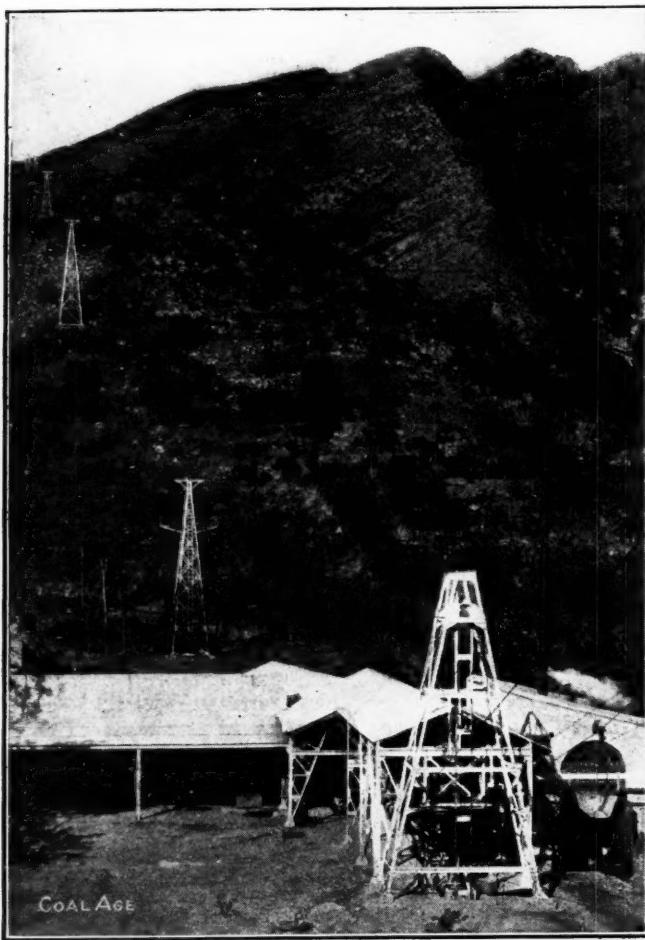
INTERIOR OF TIENSHAN TRANSFER STATION

spectively. Semi-transportable steam engines (locomobiles) are used in all cases.

THE MINES AND MINING METHODS

There are in all about 600 coal mines, many of which are temporarily shut down, the men being unable to deal with the water, while many are only worked with a few hands. The coal is conveyed by camels or mules from the mines to the loading stations of the cableway, in order there to be dumped into storage hoppers and transferred into buckets. It is afterwards taken to Toli by cableway and to Peking by rail, where about 12 Chinese dollars is netted for each ton (1 Chinese dollar=45 cents in American money).

Some words might be added to show the primitive way these mines are worked by the natives:—The coal seams come to the surface in the Western mountains at an an-



NATSHOING ANGLE AND LOADING STATION

gle of 0-35°, the upper stratum of the mountain slopes is a carbonate of lime formation containing some lime caves. All peasants in this district are on their own ground engaged in coal mining of the most rudimentary description, by hewing with primitive iron picks on the coal, in which work they are assisted by their sons and other male relatives.

The men make their way into the seam up to 3 m. (about 10 ft.) thick through several tunnels, between which the seam is left intact, so that only the volume of the tunnels and cross-cuts is extracted. Timbering is only provided in a few of the tunnels. The tunnels only penetrate a distance of 100 to 120 m. (330 to 400 ft.) into the mountain, and after a seam has thus been worked

or stripped, the mine is allowed to decay and another tunnel is dug at some other place, e.g. 20m. (65 ft.) higher.

The coal hewn is dragged up a primitive ladder to the surface in baskets and poured out on a waste heap. On arriving at the top of the heap, the miner sits down in the basket and thus slides back into the tunnel. Above the mouth of the latter, a rude house is erected, which accommodates the whole family.

♦

A Pledge to Safety First

The *Railway Age Gazette* prints a description of a new departure in the "Safety-first" movement which is as follows:

The Grand Trunk Railway of Canada, on which George Bradshaw has been promulgating "safety-first" ideas, has issued a placard 10x6½ in. the substance of which is reprinted below. The lettering is blue and red on white cardboar—a red, white and blue effect. At each corner, in the border, is a print of the safety-first button.

GRAND TRUNK RAILWAY SYSTEM THE PLEDGE

I will Railroad (mine) according to the (Book of) Rules, I will do all in my power to guard against unsafe acts on my part. If I see a fellow employee doing his work in an unsafe manner, I will speak to him, as a friend, and use my moral influence to have him perform his duties in the Safest Possible Manner. I will remember and practice at all times SAFETY-FIRST.

EIGHTY-THREE PER CENT. of all persons injured on railroads are YOU MEN WHO WORK FOR THE ROADS. SIXTY-SIX PER CENT. of all preventable injuries sustained by you are DUE TO UNSAFE PRACTICES which you could avoid.

♦

Coal Mining in China, 1912

The present coal production of China is estimated at 9,000,000 to 13,000,000 tons a year. The most important event in the Chinese coal-mining world in 1912 was the amalgamation of the Chinese Engineering & Mining Co. and its rival organization, the Lanchow Collieries, under the title of the Kailan Mining Administration.

The consul general at Tientsin reports the total output of the coal mines in the Kaiping Basin for 1912 as 1,706,658 tons, as compared with 1,433,546 tons in 1911. The anthracite mines of the Peking Syndicate (Ltd.) in the province of Honan are credited with an output of 549,877 tons, an increase of 32 per cent. over 1911.

The Chingshing collieries, in southern Chihli, are reported to be preparing for larger development. Their present output is given as 1000 tons per day. The output of the Fangtze and Hungshan collieries, belonging to the Shantung Mining Co., is reported as 469,157 tons in 1911, and 573,677 tons in 1912. The Fushun collieries, near Mukden, operated by the South Manchurian Ry. Co., produced 1,470,150 tons in 1912, and the mine at Yen Tai, operated by the same company, had a total output of 43,104 tons. The Pinghsiang mines, owned by the Hanyang Iron & Coal Co., produced but 232,373 tons in 1912, as compared with 648,476 tons in 1911.—*Daily Consular and Trade Reports.*

Relation of Big Business to Mining

BY CHARLES RICHARD VAN HISE*

SYNOPSIS—It is suggested that there be an interstate trade commission and state trade commissions, which shall have substantially the same powers to regulate co-operation in industry that the Interstate Commerce Commission and the State Commerce Commission have in regard to the public utilities.

❖

It is generally agreed, that concentration of industry up to a certain point is necessary in order to give efficiency. It would not be held by anyone, I imagine, that we should return to the situation of 50 or 60 years ago, in which industry was minutely subdivided, in which there were few organizations of large size, but many minor organizations scattered all over the country. Do you believe—do any of you believe that we shall ever return from the great flour mill to the cross-roads grist mill? It is impossible.

This illustration and many others which could be mentioned show that some degree of concentration is allowable. The practical question is: What degree of concentration is permissible and advantageous, not only for economy in production, but for the advantage of the people at large? It is therefore clear that it does not meet the question which confronts us in regard to the so called trusts to assume that all of the concentrations of industry are monopolies.

THE LAWS RELATING TO BIG BUSINESS

Monopoly has never been recognized in this country by common laws, nor by statute law; neither has it ever been so recognized in England. Coöperation in industry both by combination and by contracts has been recognized by the laws of both countries. The distinction is fundamental. In England in the middle ages both common and statute laws were stringent against combinations and contracts in restraint of trade. But Parliament more than 60 years ago wiped out all the statutes against such combinations and contracts, provided they were not monopolies, contrary to public policy, or immoral.

Also, in this country, in colonial days, the laws were strict against combinations and contracts in restraint of trade. But here, also, there was a gradual amelioration of the laws until coöperation was permitted, along many lines, including division of territory, limitation of output, and even fixing of prices; provided, always, that as a result of the coöperation the combination or contracts did not result in monopoly or were not general, were not immoral and were not contrary to public policy.

Thus we see that the laws in regard to combinations and contracts in restraint of trade went through a similar evolution both in this country and in England, and that the laws finally became liberal. In other countries than England and America, the laws in regard to coöperation are also liberal. By gradual development the principle has been reached for most civilized nations that freedom to trade means freedom to combine as well as freedom to compete. This was the situation in this country also when in 1890 the Sherman law was enacted, and immediately the wheels, so far as coöperation was concerned, were turned back to the conditions of the middle ages.

Note—Abstract of address to the 16th annual convention of the American Mining Congress, Philadelphia, Oct. 20-24, 1913.

*President of University of Wisconsin.

All combinations and contracts in restraint of trade were prohibited, and this applied to the latter even if limited in extent or confined in time. This national legislation led to an influenza of similar legislation in the states and, within a few years, more than 30 states had passed statutes against combinations and contracts in restraint of trade, many of them even more drastic than the Sherman law.

The question now arises: What were the results of these statutes? The Sherman act contained two separate provisions, one of which prohibits every contract and combination in the form of trust or otherwise in restraint of trade as illegal; another section provides that monopoly or attempt to monopolize is also illegal.

NEW ATTITUDE OF THE SUPREME COURT

By the public it was supposed that every contract and combination in restraint of trade meant what the words said, and that Congress in using these words meant to pass a new and drastic law replacing the common law; indeed the earlier decisions of the Supreme Court took this point of view and held that the reasonableness or unreasonableness of a contract or combination was immaterial. However, in the Standard Oil and Tobacco cases the court took an entirely new attitude and stated that only restraint of trade which was undue was meant to be covered by the law (although the word "undue" is nowhere in the act), that the restraint meant was that which was not permitted under the common law; and, therefore, that only contracts or combinations were prohibited by the law which were unreasonably in restraint of trade.

THE EXISTING SITUATION

What is the situation with which we are confronted? The Sherman law and the state anti-trust laws are upon the statute books. We have gone through one stage of development, have made the first step in the second stage. It is now proposed to neutralize the decisions of the court by defining "reasonable" so that it shall mean prohibitive of all contracts and combinations in restraint of trade, and thus succeed in getting statute law back to where Senator Sherman and the people thought they had gotten it 30 years ago through the enactment by Congress of the Sherman act. This would compel the beginning of another third cycle of development.

This solution of the problem of combination makes me think of the philosopher, Harold Udgardin, by name, an Esquimaux who lives up on Hudson Bay. "Harold has one trap now set in the same place where it has been for 20 years; he has not yet caught a fox in it, but he will not consider changing its location, as it is a good place, he reasons, and ought to catch a fox. "It preys on his mind if he doesn't visit and trim this fox trap regularly, and he has been known to get up and go out in the night to bait it when he was especially negligent."

Notwithstanding that the trap of the Sherman Act has never caught a fox for 20 years, and only smells in one or two places of a tail or a leg, it is proposed to strengthen its "springs" and sharpen its "teeth" with the expectation that it will then catch a sufficient number of foxes to become the solution of the great fundamental problem of concentration of industry.

SHERMAN LAW SHOULD APPLY TO SMALL DEALER AS WELL AS THE GREATEST TRUST

In regard to the Sherman Act, it has been assumed that its only violators are the great combinations. This assumption is made in practically all discussion of the question. The Steel Trust, the Tobacco Trust, and a few other large combinations are mentioned; and it is supposed that the small business men and the small producers are not acting in violation of the law. But the principle of coöperation which the Sherman Act tries to suppress extends from the great industrial centers, like Philadelphia, to the country cross-roads. Does it make any difference here in Philadelphia, the home of anthracite, whether one buys anthracite of one retail dealer or another? It doesn't make any difference in the country cross-roads either. The price is just the same from all the dealers in the same locality. The same is true of ice, the antithesis of anthracite, and is also true of all standard articles.

The principle of coöperation has extended from the great manufacturers and the great dealers of the large cities to the small manufacturers and small dealers of the small cities and even villages. All are coöperating in exactly the same way; the principle is the same for the large and small men, one is violating the law just as certainly as is the other. I am willing to stand for enforcement of law when the law is enforced alike for all; but when somebody is picked out because he is in the front seat, or because it is good politics to attack him and ninety-nine or nine hundred and ninety-nine are allowed to escape, I say that it is a profoundly immoral situation. And that is exactly the existing situation in this country. The politician who says "Break up these trusts; destroy them," says with the very same breath, "We must have coöperation among the farmers."

Why, gentlemen, the cranberry growers of Cape Cod, New Jersey, and Wisconsin, sell about 90 per cent. of their products through an agency down in Hudson St., New York. Similarly, many products of the farmers, illustrated by cotton, citrus fruits, etc., are marketed through coöperative selling agencies. Have we heard of the Attorney-General prosecuting these farmers? Congress understands the situation and at its two recent sessions it attached to the sundry civil bill a clause containing an appropriation of \$300,000 for the enforcement of the antitrust laws, which included the provision that none of this money should be spent in prosecuting combinations or agreements of labor, nor spent "for the prosecution of producers of farm products and associations of farmers who coöperate and organize in an effort to and for the purpose to obtain and maintain a fair and reasonable price for their products."

The purpose of this provision is clearly to make the Sherman law class legislation by indirection and, in effect, to prevent equality before the law of the manufacturer as compared with the farmer. Also, some of the smarter state legislations have seen the situation, and in order to prevent the farmers from being hit by their anti-trust bills exempted the products of the lands so long as in the hands of the producers. This was true for Texas, Louisiana, Illinois and South Dakota. You see the state legislature, like Congress, saw that the farmers have so many votes that they have to be dealt with gently when they form a trust.

THE FARMERS WILL NOT BE SO ENTHUSIASTIC ABOUT "TRUST BUSTING"

But some of the state laws got into the United States courts, and these courts promptly declared these exemption unconstitutional as being special legislation, and not giving equal protection under the laws. I venture to predict that it will not be so popular a political game to shout, "Bust the trusts" when the farmers understand that their trusts are also to be "busted."

No more pernicious or immoral legislation was ever passed by Congress or by the states. Fortunately Ex-President Taft and President Wilson have both protested against the pernicious action of Congress. The principles of justice in regard to trusts and combinations are alike for the manufacturers, the farmers and the laborers.

There is just as close-riveted an arrangement between the three icemen in the country town as there is in steel; and any solution of the problem of combination, if it be a just solution, must be applied not only to steel, tobacco, etc., but to the small tradesmen and the farmer. Just as certainly as the great combinations are violating the Sherman Act, as I have no doubt many of them are, so are the small aggregations of wealth violating state antitrust statutes. This general violation of the trust laws, national and state, is the problem that we have before us.

THE BREAKDOWN OF COMPETITION

The late Attorney-General of the United States, Mr. Wickersham, said: "If we can only break up each of the great combinations into six, or eight, or ten parts, these different parts will compete; the tendency to competition under such circumstances is irresistible." But I tell you, gentlemen, the tendency for coöperation in this Twentieth Century is so much stronger than the tendency for competition, that you will never restore the latter in the old sense.

There will be competition between different classes of goods; there will be competition between the great mail-order house and the village grocer; there will be competition in service; and I am just as anxious as anyone to have trade regulated by competition as far as possible; but, as a matter of fact, competition has broken down hopelessly in this country to adequately control prices; to adequately control quality; and we all know it.

We have recognized the failure of competition to secure quality by the establishment of the pure-food laws. Why should we have pure-food laws if competition will give us good quality? If articles were fraudulently sold, so important to the general welfare as foods, there was a remedy in the courts. If I were sold a thing as pure strained honey, that was wholly innocent of having any relation whatever with a bee, I had a remedy in law; I had been fraudulently dealt with. Why didn't I take my case to the courts? You know why. The loss was so small that it was impracticable for the individual to thus obtain redress.

Finally, recognizing the fact that competition was wholly inadequate to secure pure food, national and state pure-food laws were enacted and special officers were designated upon whom was imposed the duty of protecting the public. When we confessed that competition did not regulate quality, and imposed the duty of protecting the public upon administrative officers, we succeeded in get-

ting pure food, or a reasonable proportion of pure food, at least, and never until then.

MAGNITUDE AND EFFICIENCY

Now, why is it that competition to regulate prices has broken down? Because of the simply enormous advantages which come with coöperation. One of these has been mentioned—the economic gains of magnitude. In this matter there are no differences of opinion up to a certain magnitude. We all agree that the nation will not return to the country grist mill; but this does not settle the question regarding the magnitude that is permissible.

I have looked through the books, and I have had experts examine the literature of concentration, to find if investigations had been made which would give facts upon which to base a judgment regarding the relation of efficiency and magnitude. The only such investigation of which I find record is that of Herbert Knox in regard to the steel industry. The late Commissioner of Corporations, as the result of an elaborate inquiry, reached the conclusion that the large concentrations in the manufacture of steel are very much more efficient than the small ones, and for certain products he gave the amount per ton. He stated that the five great combines—United States Steel, Lackawanna, Cambria, Jones-Laughlin, Republic—have an advantage for pig iron and steel billets from \$2.50 to \$5 per ton, as compared with the smaller organizations. Similar investigations should be made for other lines of industry than steel, so that we may have a scientific foundation upon which to decide how far we shall permit magnitude.

THE FORCES WHICH PRODUCED COMBINATION

This brings us to the next point of the discussion—the forces which have led to combination in this country. One of these is directly related to what has just been said. Each step from the loose association to complete merger was taken to escape the last decision of the court because of the irresistible tendency for coöperation. Germany and England are vastly more fortunate than we are in this respect, in that, permitting reasonable coöperation, they have allowed firms to coöperate without driving them to consolidation. The units of the various cartels and combinations in these countries have therefore surrendered their autonomy to a less extent than the elements of the combinations in this country.

Other forces which have led to combination are the desire to eliminate or at least restrict competition, the desire to limit output and divide territory—and in connection with these the maintenance of prices. These forces may be legitimate or illegitimate, depending upon the extent to which they are carried.

THE RELATIONS OF COÖPERATION AND CONSERVATION

There can be no question that the competitive system, when unrestrained, is positively opposed to the policy of conservation. This is true alike for minerals and timber, but tonight I can only consider the first aspect of the subject.

The minerals of the earth, and here are included not only the metallic minerals but the carbon compounds, required the building of the earth for their making. Mineral deposits are doubtless in the process of manufacture at the present time; but even if so, this is at so slow a rate as to be negligible. From the point of view of man-

kind, the stores of minerals in the earth are deposits of definite magnitude upon which we may draw but once and which by no possibility can be increased. To illustrate, with regard to the banks of coal, the situation in regard to this subsurface produce of first importance for the human race is similar to that of a man who has a deposit in a bank upon which he may draw, but cannot by any possibility increase by a single dollar. He is obliged to make his existing bank account last throughout his life. Similarly the mineral resources of the earth must last throughout the life of humanity.

In this connection it should be recognized that modern civilization would not be possible without the mineral resources of the earth—no iron ships, no metal agricultural implements, no tools except those of stone, no fuel but wood. Without the subsurface products of the earth, we would at once return to the material conditions of the stone age.

It is therefore incontrovertible that, from the point of view of the human race, economic systems or laws which result in unnecessarily rapid use of the mineral stores of the earth are indefensible; but such are the economic theories and laws now dominant in the United States. The wastefulness of the competitive system may be proved with regard to every product which is taken from the earth.

COAL

The most disastrous losses in the mining industry, so far as the future of the human race is concerned, are in connection with coal. Dr. Holmes, in a paper upon mineral wastes, presents the facts in regard to the ruinous wastes of the unrestrained competitive system in connection with coal. He says that in the early days of mining, when there was much subdivision of ownership, that not more than 30 to 40 per cent. of the anthracite coal in the veins mined was brought to the surface, leaving from 60 to 70 per cent. in the ground. He states that even at the present time not more than 50 per cent. of the anthracite reaches the surface. The situation is similar for bituminous coal, but until recently the losses for such coal were substantially half. This loss has been somewhat reduced, but it continues to be appalling.

Dr. Holmes estimates that since the beginning of mining in the United States, "two billion tons of anthracite and three billion tons of bituminous coal have been left underground in such condition as to make its future recovery doubtful or impossible." The principles which, from the point of view of conservation, should apply to mining of coal are well known. So far as practicable the mines should be so worked as to make one superimposed vein after the other available. Coal slack should be reduced in amount and should be utilized. No considerable percentage of coal should be left in the ground as pillars. If these reforms were introduced, the losses could be reduced to half the present amounts and possibly to one-fourth.

Under the Sherman law there is no opportunity to limit output, divide territory, or regulate prices. If the operators could agree upon limitation of output, and division of market so as to reduce freights, and could arrange for reasonable prices which would give them no more than their present profits, they would then be able to follow these principles in mining their coal; for they themselves would be gainers in prolonging the life of their mines,

and, far more important, many future generations would be the immeasurable gainers in that they would have an adequate coal supply.

It is doubtless true that the plan proposed would result in somewhat higher prices for bituminous coal; but, even so, coal would be cheaper in this country than in others. This slight additional increment, however, would be but a small social burden for this generation to bear in order to leave an adequate heritage to future generations. Under the competitive system, we are recklessly skimming the cream of the natural resources of a virgin continent with no regard for the rights of our children.

CORRECTIVE MEASURES

My proposal, gentlemen, is neither regulated competition, nor regulated monopoly, but retention of competition, prohibition of monopoly, permission for coöperation and regulation of the latter.

It has been proposed that combinations should be so divided that no one corporation shall have more than 50 per cent. of any business. That is Mr. Byan's suggestion. In the case of the Stanley bill, the presumption of the violation of the Sherman law is against a corporation having more than 30 per cent.

Now, it makes no difference whether you break the great combinations up so that no one combination has more than 50 per cent. or 30 per cent. of a line of business, or so that there are 10 with 10 per cent., or 20 with 5 per cent. The demonstration of this lies in the fact already mentioned that thousands of farmers may and do coöperate in marketing their products just as perfectly as do the five great manufacturers of steel. This they do in various parts of the United States for numerous products.

At the present time there are state and national movements to still further extend the advantages of coöperation to the farmers. Since it is unquestionable that the sense of justice of the citizens of the United States will support the courts in prohibiting class legislation, we shall, therefore, I believe, ultimately permit coöperation in all lines of business alike. If we, however, retain freedom of competition, permit concentration sufficient to give efficiency, allow reasonable coöperation, and prevent monopoly, this will require regulation just as it has been necessary to regulate the railroads. This done, the Sherman law will be forgotten.

Has there been any prosecution of the railroads for violations of the Sherman law because of collusion in fixing rates? And yet, every one of us here knows that they are just as flagrant violators of the Sherman Act as any other class of corporations in the United States. Are the freight rates the same for different roads between any two points? Are the passenger rates between Philadelphia and Chicago identical on all roads? Can you do better in price by traveling over the Pennsylvania than over any other road? The rate is the same, providing the speed is the same. How does it happen that the roads all got together? Just by Providence, I suppose. It was doubtless by a Providential act that these rates were fixed identically upon all roads, under the same conditions, all over the country.

Why is it that nobody proposes to indict the railroads for collusion? Simply for the reason that the rates which they can charge are controlled by commissions, national and state. Nobody any longer wishes to make them further trouble, because the public is protected by its commissions. That is the sum of the whole matter. The

railroads are just as much amenable to attack under the Sherman Act as any other combination in the United States; but when the railroads are giving reasonable rates and are competing in giving reasonable service, even if the law is on the statute books and is the hallowed thing that has been described, the sense of official justice is such that they are not attacked in the courts. Will the Attorney-General of the United States or the Attorney-General of this or any other state bring suit against the railroads for conspiracy in fixing rates when the public is properly protected? I have not heard the proposal made anywhere.

However, it is a wrong condition when we have on the statute books a law of a kind which requires the officials of justice to close one eye whenever they pass by the men in control of one great group of industries, and at the same moment see other men not one whit more guilty. We ought to remedy this condition so that honorable business men shall not be in the position, the unfortunate position, of being technically violators of statutes which are not advantageous from the public point of view to enforce.

TRADE COMMISSIONS SHOULD BE CREATED

I have not time to more than touch upon necessary modifications of the law; but the substance of my remedied proposal is that there be an interstate trade commission and state trade commissions, which shall have substantially the same powers to regulate coöperation in industry that the Interstate Commerce Commission and the State Commerce Commissions have in regard to the public utilities. It seems to me that the Interstate and State Commerce Commissions and the administrative bodies for the pure-food laws point the way for the next constructive step in the development of the laws.

The Sherman Act can be left to apply, as defined by the Supreme Court, to monopoly. Unreasonable restraint of trade may be defined as monopolistic restraint of trade, and it is rather generally agreed that monopoly should be prohibited. To make the matter perfectly clear another amendment should allow reasonable coöperation, but such coöperation should be under the watchful eyes of administrative commissions in order to protect the public.

POWERS OF COMMISSIONS

The coal operators at a conference held in Chicago in May, 1912, agreed upon a bill for the establishment of an interstate trade commission. The important power proposed for such commission was the authority to decide whether any proposed arrangement is in opposition to the Sherman Act as it now exists under the interpretation of the courts. If any arrangement is approved by the commission as in accordance with law, then the organization which enters into such an arrangement is to be free from prosecution under the Sherman Act. Also the commission is empowered to require the discontinuance of any existing trade arrangement, practice or combination, which is found to be in violation of the national trust law.

From the foregoing discussion it is apparent that while the above proposal is a move in the right direction and is an improvement upon the present situation, it is not adequate. The frightful wastes of unrestrained competition as applied to mineral products, and especially as applied to coal, can only cease when operators are permitted to coöperate in limiting and dividing the market. However, if they are permitted to thus coöperate, there is

danger that the public may be required to pay unreasonable prices; and therefore any such coöperation should be under the watchful eyes of commissions that should have power to require the discontinuance of any trade arrangement found inimical to the public welfare.

Ultimately also it will probably be found necessary to give the commissions the same authority in regulating prices that the State and Interstate Commerce Commissions have in regulating rates for the public utilities. The burden of fixing prices should rest with the operators; but whenever any man feels that a price is unreasonable, he should have the right to have his case brought before a commission for adjustment. If, after investigation, any price is found to be unreasonable, the commission should have authority to issue an order that it be made reasonable.

ALL UNFAIR PRACTICES SHOULD BE PROHIBITED

The proposed trade commissions should have a number of other powers which I have not time fully to discuss. It is clear that all unfair practices should be prohibited; and by unfair practices is meant to include everything covered by the term immoral practices under the common law. If I were to define unfair practices, it would be that they should include all those practices of every kind which are inimical to the welfare of the people.

Another, and perhaps the most vital, point of the law creating the state and interstate road commissions should be that when an individual is wronged through unreasonable rates, or rebates or other discrimination, it should be the duty of a public commission to handle his case.

POWERS TO BE GIVEN GRADUALLY

I should not expect that these trade commissions, if created, would at once be granted all the powers which they would finally exercise. In this matter I should expect the same slow development to take place that has occurred regarding the commissions which control the public utilities.

More than 40 years have elapsed since the creation of the Interstate Commerce Commission. These early commissions had the powers of recommendation of requiring publicity, etc. Finally the commissions of Illinois and Iowa were given the power to control rates, but comparatively little came of this authority. It was not until 1895 that in Wisconsin a comprehensive law was enacted to control the railroads. The passage of the law was strongly resisted by the companies, because of the fear that the proposed commission would treat them unfairly, but the act was passed despite their opposition.

Under the law, there were appointed in that state by Senator R. M. La Follette, then Governor, a scientific commission composed of three men, one a well known lawyer, the other a keen statistician and the third an eminent professor of transportation. I have heard from many of the railroad men, including a railroad president and some of the ablest railroad lawyers, that the Wisconsin commission has been fair and reasonable both to the railroads and to the public. Neither side would go back to the previous situation—upon one side hold-up bills to be defeated by questionable methods at each session of the legislative; upon the other side numerous rebates and discriminations. Before we had a railroad commission in Wisconsin there was continuous war between the people and the railroads. Since that commission has been

created, and especially since its authority has been extended over all the public utilities of the state, including the adjustment of rates, we have had peace.

INTERSTATE COMMERCE COMMISSION

Similarly, the Interstate Commerce Commission had small powers at first, merely powers of recommendation; and it was only six years ago that this commission finally gained the power to fix maximum rates; and at the present time the commission has not the power to initiate rates. The initiative rests with the railroads. It is only two years ago that the Interstate Commerce Commission gained the power to suspend advances of rates pending investigations regarding their reasonableness. Thus, stage by stage, conservatively, the development of the control of public utilities by administrative commission was worked out.

Substantially the same history applies to the pure-food laws. Doubtless the extension of laws of this class will go on until fabrics are included; until fraud will be practically eliminated through the use of false names for any commodity.

I would have the proposed trade commissions pass through a similar history. Thus, precisely as with the Commerce Commissions, by slow development, industry where coöperation has so extended as to become affected with a public interest would be controlled by trade commissions under the same lawful methods that have been applied to the public utilities. Concentration, coöperation, and control are presented as the keyboard to the solution of our great industrial problems.



Natural-Gas Consumption in Pennsylvania

From almost every point of view, the consumption of natural gas in Pennsylvania surpassed in 1912 that of any previous year. According to B. Hill, of the U. S. Geological Survey, the consumption in 1912 reached a total of 173,656,300 cu.ft. This gas was used largely for manufacturing and other industrial purposes, the quantity thus consumed reaching 124,324,911 cu.ft. valued at \$14,333,048, the average price being 11.53c. per thousand cubic feet. It is needless to say that Pennsylvania leads all other states in the quantity of gas consumed.

Gas is the ideal fuel for the manufacture of iron, steel and glass, for which the state of Pennsylvania is noted. The presence of natural gas in this state has helped to make it the leading manufacturing commonwealth in the country. Since the introduction of natural gas into the industrial establishments of Pittsburgh, in 1883, this district has continued to grow until it has become the greatest industrial center in the United States. It is estimated that more fuel is consumed in the city of Pittsburgh and its immediate vicinity, and more coal and coke is shipped into and through the Pittsburgh district than any other district in the world.

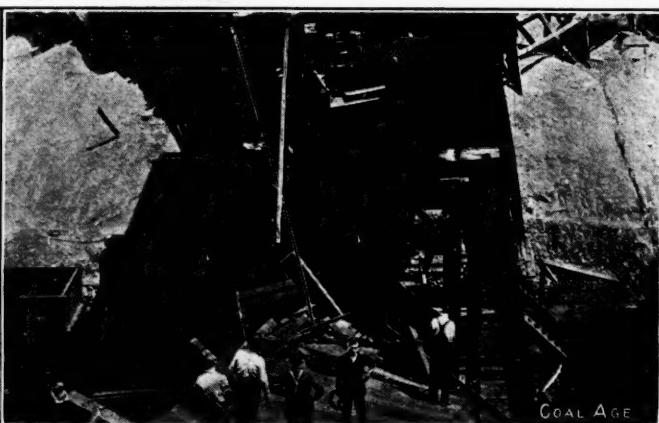
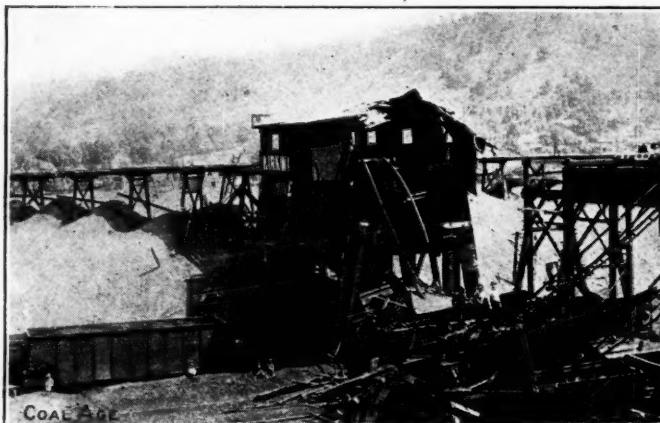


When it is necessary to use doors in mines, these should be given a sufficient fall to close readily, or be made self-closing by the use of weights or other means. It is generally necessary to have an attendant or trapper at most doors on main haulageways and because these trappers often neglect their duties, trouble results. If the doors are made to close automatically, much of this trouble will be avoided, as the doors will close when released.

SNAP SHOTS IN COAL MINING



A TORNADO RECENTLY DESTROYED THE MINE BUILDINGS AND HOUSES OF WESTERN MINING COMPANY AT BUSH, ILL.

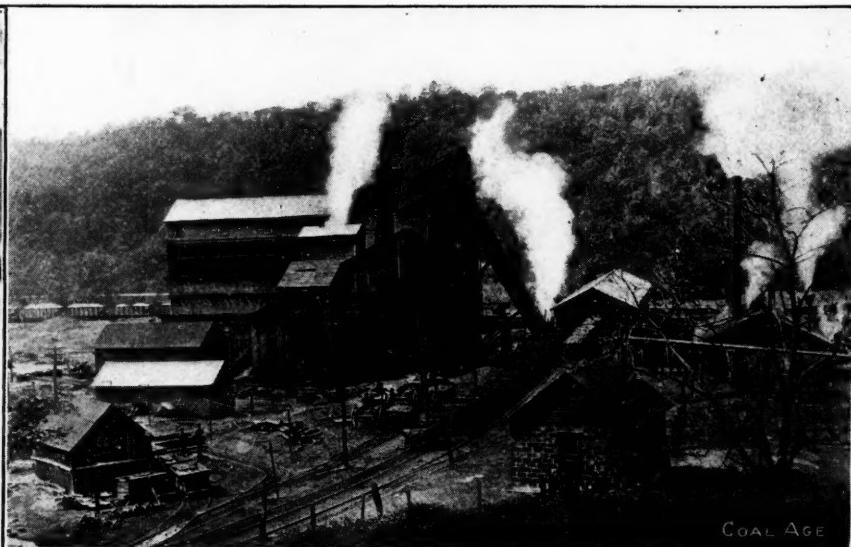


THE COAL TIPPLE AT KIRKWOOD MINE OF HUTCHINSON COAL CO., IN OHIO, WAS DEMOLISHED BY RAILROAD WRECK

A CLOSER VIEW OF THE KIRKWOOD TIPPLE AT BRIDGEPORT, OHIO, AFTER RAILROAD WRECK, JULY 7, 1913



SAMPLE OF COKE MADE AT SUNNYSIDE, UTAH



TIPPLE AND WASHER OF DONALD NO. 2 MINE, CONNELLSVILLE COAL & COKE CO., GRAY'S LANDING, PENN.

LEGAL DEPARTMENT

Place for Delivery of Coal

By A. L. H. STREET*

SYNOPSIS—*Silence in contracts to sell coal as to where delivery shall be made frequently leads to litigation. Trade custom or surrounding circumstances sometimes supply omission. Judicial construction placed upon particular words and phrases which have been used in coal sales contracts. Review of cases passed upon by the appellate courts.*



Contracts to sell coal have often been involved in litigation on account of their failure to clearly specify where the parties intended delivery to be made. As pointed out in a recent article in COAL AGE, treating another phase of the subject (that involving the question when delivery to a carrier operates as delivery to the buyer), the question as to what place is fixed for delivery becomes important in instances where the ownership of the coal or other subject of sale at a particular time is in dispute, as affecting, among other things, questions whether the buyer or the seller is the proper person to make claim against the carrier for any loss or delay of the shipment during transportation, or whether the seller is entitled to recover the contract price, notwithstanding the loss or injury. Avoiding the phases which were treated in the article mentioned, I present the following observations, which are based upon the appellate court decisions cited:

WHEN A CONTRACT IS SILENT AS TO POINT OF DELIVERY

It is usually held by the courts that when a contract is silent as to where delivery is to be made, it will be presumed that the parties intended that delivery should be made at the place where the subject of sale was situated when the bargain was concluded. The legal principle will be controlled, however, by any contrary trade custom, in view of which the parties may fairly be presumed to have contracted; or the intention of the parties as to where delivery shall be made may be inferred from the surrounding circumstances (45 Nebraska Supreme Court Reports 655). Accordingly it has been held that, under an agreement to sell coal at a specified price at the mines, for shipment to the buyer at Chicago, with draft attached to the bill of lading, payable on arrival of the coal, delivery was required at Chicago, though the buyer agreed to pay the freight (80 Illinois Appellate Court Reports 144.)

When a contract requires delivery in a certain city, but it and the surrounding circumstances fail to disclose the intention of the parties as to the exact place where delivery was intended to be made, the buyer is entitled to fix the particular point at which he desires delivery (36 Missouri Supreme Court Reports 310). Prepayment of freight charges by the seller tends to show an understanding that delivery is to be made at the destina-

tion, but does not, of itself, conclusively establish such intention (Pennsylvania Supreme Court, 50 Atlantic Reporter 928.)

A CASE IN ARKANSAS

It would seem that a contract to sell coke "f.o.b., Van Buren, Ark.," too plainly requires delivery at that point to render it necessary to invoke judicial interpretation, but the Arkansas Supreme Court has been called upon to affirm that point (122 Southwestern Reporter 239). On the other hand, however, a contract by a Philadelphia coal company to furnish a Rhode Island concern with its coal requirements at "\$2.40 per ton of 2240 lb. f.o.b., Philadelphia" was held to merely fix the price up to that point and to require delivery at the buyer's yard, where the agreement further specified that a third party or any other mutually satisfactory concern should freight, insure, unload and haul the coal to the buyer's works for \$1.35 per long ton; that the total payments to both parties should be \$3.75 per long ton, delivered at the buyer's yard; that the coal should be delivered at such times and in such quantities as the buyer should direct; and that the seller should have at least one thousand tons of coal constantly in the buyer's yard, which amount should not be stored during continuance of the contract without being drawn upon by the buyer; but that the coal should remain at the seller's risk and not be paid for until expiration of the contract, etc. (United States Circuit Court of Appeals, First Circuit; 162 Federal Reporter 848.)

HOW AN OHIO COAL COMPANY LOST OUT

A contract by an Ohio coal company to furnish fuel for the use of "The Edison Illuminating Company, of Detroit, f.o.b. Michigan Central R.R." was held by the Michigan Supreme Court to require delivery on the tracks of that railroad at Detroit. It was further held that postal cards sent by the coal company to the buyer, reading: "In our office. We ship this day on your account," followed by a schedule showing car numbers, quantity shipped in each car, etc., were not inconsistent with a mutual understanding that delivery should be made at Detroit (107 Northwestern Reporter 915.)

Where a coal dealer wrote a customer at Aurora, Ill.: "Until otherwise advised, the price of coal for future orders will be \$4 for lump and nut, and \$2.50 for pea coal, f.o.b. E., J. & E. tracks, your station," and in accepting a subsequent order wrote: "We cannot make the pea coal any lower than \$2.75 per ton, f.o.b. E., J. & E. tracks, Aurora," it was decided that the contract required delivery to the customer at his home town; rendering it unnecessary for him to look to the carrier for delay in delivery (126 Illinois Appellate Court Reports 253.)

Agreement to "furnish" coal on board cars at a certain place constitutes a contract to deliver there, although, under the agreement, the coal is to be weighed at another point to which it is to be shipped (Iowa Supreme Court, 33 Northwestern Reporter 622.)

*Attorney at law, St. Paul, Minn.

POWER DEPARTMENT

A Central Station in West Kentucky

BY NEWELL G. ALFORD*

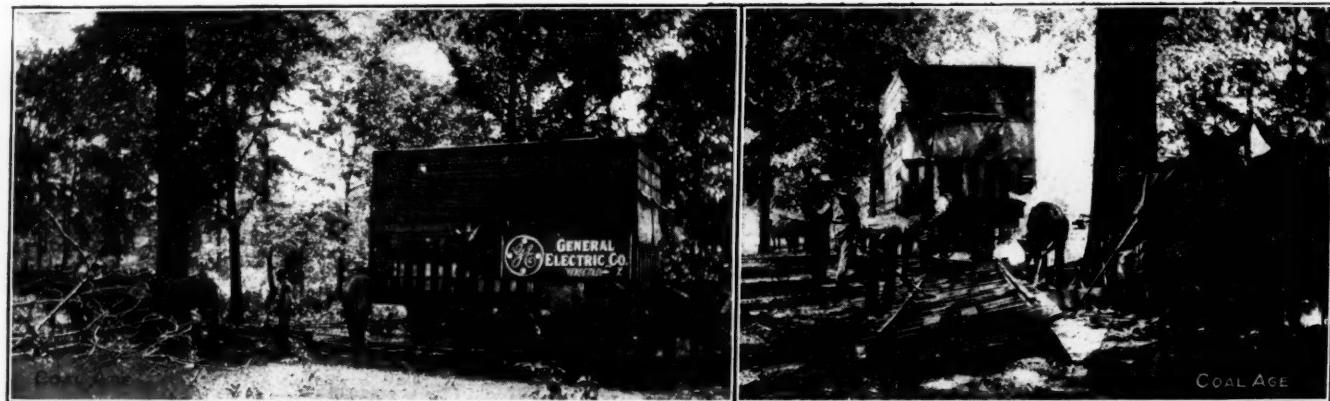
SYNOPSIS—The utilization of the exhaust steam from three air compressors for the generation of 500 kw. of alternating current. A considerable proportion of the power required for three mines is thus made from a waste product formerly thrown away.



With the advent of a central-power plant at Earlington, Ky., the St. Bernard Mining Co. has set the power efficiency pace for its fellow operators in the western Kentucky coal field, simultaneously inaugurating a new era for its vicinity and joining the quest popular in other districts for increased operating economy.

valve engines direct connected to generators. The prime movers drew their supply of steam from five Erie City boilers of 150 hp. each on which steam pressure was carried at 70 lb. during operation.

In consequence of the relatively high operating cost of this plant a possible means of reducing its expense was sought, and attention was turned to the possibilities of the compressor plant located in the hills about one and one-half miles to the northeast of the old power house. This plant distributes compressed air within a radius of two and one-half miles to the working faces of No. 9 and No. 11 mines. The boiler room at this plant is 72 ft. long and 54 ft. wide. It is a wooden frame covered with corrugated iron sheeting. This structure contained a battery of four Erie City boilers, each rated at 150 hp., and upon which steam was carried at 95 lb. Occasionally



TWO VIEWS OF THE 500-KW. TURBINE BEING TAKEN THROUGH THE WOODS TO THE POWER PLANT

During its continuous operation in the last 43 years this company has thrived under cautious management. Its high production mark was reached last year with an output of 1,750,000 tons of coal from its nine individual developments, the relative locations of which are shown upon the accompanying map.

The operation of these nine mines prior to the new installation required 4500 boiler horsepower, necessitating the consumption of 250 tons of run-of-mine coal per 24 hours. At each of the mines which the company operates electricity is used for either cutting coal, haulage or lighting. With the exception of mines No. 9, No. 11, and the Hecla shaft, each operation had its own isolated power-generating unit. From the No. 9 power house now abandoned direct current was transmitted to the three operations above named, but due to heavy line losses the potential varied considerably at the points of application.

SEVERAL MACHINES WERE DISCARDED

The abandoned power house built in 1903 contained an accumulation of generating machinery which had been purchased from time to time as requirements demanded. The original installation consisted of four simple slide-

for short periods these boilers were overloaded prior to the first operation of the new turbine installation. A fifth boiler has since been added.

Adjoining the boiler room is the air-compressor room 60 ft. long and 45 ft. wide, of the same type of construction as the former, with the exception that it has a concrete floor. Here two Norwalk and one Ingersoll-Rand straight line air compressors supply air under a pressure of 85 lb. These three machines compress 3538 cu.ft. of free air per minute during the day, and 3224 cu.ft. at night. Allowing for friction losses, the power required to compress this amount of air is 590 hp. during the day, and 538 hp. at night.

Assuming a steam consumption of 40 lb. per horsepower-hour, which is conservative in this class of apparatus, the steam consumed during the day is found to be 23,600 lb. per hour, while a corresponding consumption at night is 21,500 lb.

As a check upon these computations upon the available amount of steam, it may be stated that there is 600 hp. of installed boiler capacity, which, under normal rating, evaporates 30 lb. of steam per horsepower-hour, or a total of 18,000 lb. per hour. Since, however, the boilers were overloaded periodically it is safe to assume that there

*Earlington, Ky.

is at all times 20,000 lb. of exhaust steam per hour available for use in a mixed or low-pressure steam turbine. With this conclusion substantiated a course of action was mapped out which had as its culmination the generation of current from the exhaust steam from the air compressors.

AS MUCH CURRENT GENERATED AS BEFORE

The installation of such a low pressure generating unit made possible the production of the same amount of current as was formerly generated in the old power plant without the fuel charges and expense of upkeep on the boilers and numerous machines. In other words, the steam consumed by the turbine at the new plant is merely a waste product from the air compressors. The only charges against such an installation are interest depreciation and the maintenance of the turbine and condensing apparatus.

The load on the former direct-current power house consisted of five mine locomotives ranging from 12 to 15 tons, five motors, four coal-cutting machines, and the mine lights at Hecla, No. 9 and No. 11 mines. This made a total connected horsepower of approximately 985, which is equivalent to about 740 kw. Readings taken at the old power house showed that the average load was about 240 kw., with a maximum peak of 550 kw. The latter never lasting over two or three minutes. This gave a load factor based upon a nine-hour day of 33½ per cent.

As this plant was a 250-volt direct-current installation, located at Earlington, some distance from the point where power was used, heavy line losses were incurred. These are for the most part eliminated in high-tension alternating-current transmission. Consequently it is perfectly safe to assume that the load factor on the new alternating plant does not exceed 35 per cent., including losses in the transformers, motor generators, and transmission lines.

Since the installation of the new units the following motor load has been added to the original amount. Two 25-hp. fan motors, one 5-hp. shop motor, and a 30-hp. motor for propelling the cooling tower fan. With these additions there is a total load of approximately 820 kw., which at a 35 per cent. load factor gives an average day load of 285 kw., with a maximum peak of approximately 625 kw. The plant above mentioned, however, was considered as the first step in the centralization of power, with still further developments to follow. Six of the company's mines still use isolated power generation. With this in mind, further expansion was constantly considered in all designs and specifications.

The type of alternating current to be adopted was the first problem to be dealt with. In the first place, there are two standard frequencies from which to choose, namely, 25- and 60-cycle. Each of these has its advantages, the former being perhaps better adapted to power transmission, and the latter to lighting. The line losses decrease as the voltage increases, but since the farthest point of application in this case was only three miles distant, and the element of danger is to a large extent reduced by lower voltage, the current finally decided upon was three-phase, 60-cycle, at 2300 volts.

PROVISION MADE FOR USING LIVE STEAM

Although the exhaust steam supply from the air compressors is constant under normal conditions, there are times when one or more of these machines are shut down.

With a mixed-pressure turbine any stoppage of supply from the compressor may be made up efficiently by live steam from the boilers. This is done by means of special expanding nozzles, which receive the steam at boiler pressure and deliver it against the turbine rotor. These nozzles, of course, occupy but a small section of the wheels' periphery. With this construction the normal power of the turbine can be secured from high- and low-pressure steam at the same time, the two pressures being utilized in whatever proportion the conditions demand.

There were two principal reasons for selecting the 500 kw. turbine of General Electric Co.'s manufacture: (1) The mixed-pressure machine offered by this company had a higher efficiency guarantee than the low-pressure turbines of other makes. (2) The mixed-pressure machine is available as a high-pressure turbine at reduced efficiency. This would be a highly desirable feature should the management at any time adopt a complete new installation, in which a low pressure turbine could not be advantageously employed.



A VIEW OF THE TRANSMISSION LINE

The street lighting for the town of Earlington is provided for in the Wood are machine, which was moved to the new plant from the old power house.

PIPING DETAILS

Live steam is supplied to the compressor room by a 10-in. header on which is placed a horizontal cast-iron steam separator draining to two heaters of the open type. Immediately beyond this is a group of valves through which steam is delivered to the three air compressors, a 200-kw. Curtis turbo-generator unit held for ease of emergency and the expansion nozzles of the larger turbine mentioned above.

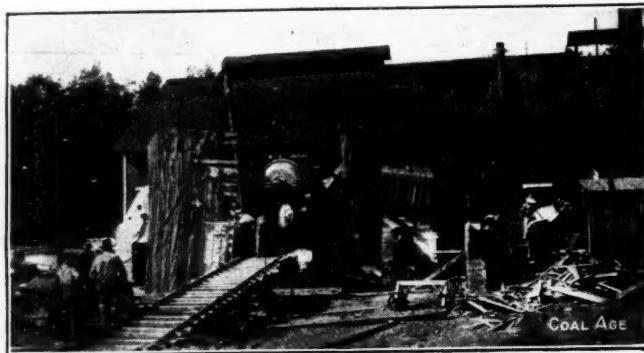
The exhaust system consists of a 14-in. pipe extending from the heaters to the exhaust turbine. A tee in this line supplies the exhaust steam to the heaters, another provides an outlet to the atmosphere, while the exhaust from the compressors is feed in at convenient points.

Between the exhaust feeders from the compressor and the feed-water heaters is a 12-in. back-pressure valve located beside a 12-in. gate valve. The function of this back-pressure valve is to relieve the exhaust system when the supply from the air compressors exceeds the demand

of the mixed-pressure turbine. Between the 12-in. gate valve and the feed-water heaters, the exhaust line from the condenser circulating pump enters the exhaust header. The circulating pump is, therefore, relied upon as the chief source of exhaust steam for feed-water heating purposes.

Since the exhaust from the air compressors contained about 10 per cent. of water in suspension and a considerable amount of oil, it was deemed wise to equip this line with a horizontal oil and water separator, which admits only dry steam to the low-pressure connection on the 500-kw. turbine. A similar piece of apparatus, but built for high pressure, protects the 200-kw. machine.

Between the oil and water separator and the 500-kw. turbine is a Davis flow-regulating valve. This tends to close when the exhaust steam demanded for the turbine exceeds that furnished by the air compressor. It also tends at all times to maintain atmospheric pressure between this valve and the compressors and prevents their speeding up. In other words, it prevents the vacuum from coming back through the turbine to the air compressors and their piping system. At such times, the deficiency of steam is made up by the high-pressure steam connection.



PLACING THE TURBINE ON FOUNDATION

The condenser, which is common to both the 500-kw. and 200-kw. units, is located between their respective foundations. In arranging the piping to this machine, a 36-in. corrugated copper expansion joint was attached directly to the exhaust flange of the 500-kw. turbine; and a similar device 16 in. in diameter is placed upon the 200-kw. machine. This relieves the turbine structures from strains which would otherwise result from the expansion and contraction of the piping in the condensing system. Atmospheric exhaust release valves are inserted in this piping also.

SELECTING THE CONDENSER

The selection of the condensing equipment was an item which received careful attention in view of the fact that the water conditions were somewhat unusual. About a mile from the power house there is a lake 125 acres in area. It was first thought that by placing a pump upon its shore and laying an intake and discharge line from this point to the power house, enough water could be supplied for condensing purposes.

This, however, had its bad features, in view of the fact that it would have been an expensive arrangement, and, furthermore, that during the summer months the entire contents of the lake might have been heated up to a considerable degree.

Another alternative was as follows: To the north of the compressor plant is a steep ascent, on the top of which is an ideal spot for a pond of about 5 acres in area. This could have been secured with slight excavation and damming on one side. Water could then have been fed to the condenser under a gravity head and returned to the far end of the pond to prevent short-circuiting. This would allow a considerable area to act as a natural cooling surface. This idea was, however, abandoned in favor of a forced draft type of cooling tower with which apparatus an operator is, to a large extent, independent of atmospheric conditions.

The cooling tower chosen for the condenser is of the Barnard forced draft type manufactured by the Wheeler Condenser & Engineering Co. The tower is of steel-plate construction, the filling consisting of galvanized wire mats hung vertically edgewise to the air current, thus reducing the load on the fan. Two fans are employed upon a single shaft, which is driven by a General Electric 30-hp. motor.

This tower is guaranteed to cool 1450 gal. of water per min. (which is the amount necessary for circulating purposes) from 100 deg. to 83 deg. F., with air at 70 deg. F. and a relative humidity of 70 per cent.

A JET CONDENSER IS EMPLOYED

The condenser is a Wheeler rectangular jet of the low level counter-current or rain type, and is designed to serve both the 200-kw. high pressure and the 500-kw. mixed pressure turbine, maintaining a vacuum of 27 in. referred to a 30-in. barometer when operating with the cooling tower under the conditions above named. Steam enters at the end of the shell which is amply proportioned to prevent any loss due to the pressure drop. The cooling water, which is siphoned from the tower tank, enters at the top and is broken up by a series of baffles and spray-plates into a fine rain, condensing the exhaust and becoming heated to a point very close to the theoretical temperature of the vacuum. The more intimate the mixture of the steam and water which can be obtained in a condenser, the smaller the quantity of injection water required. In this instance, the small amount of injection water necessary reduces not only the power demands upon the withdrawal pump, but also the size of the cooling tower. In practice, the temperature of the circulating water and condensate leaving the condenser is within 5 deg. of the theoretical temperature of the vacuum.

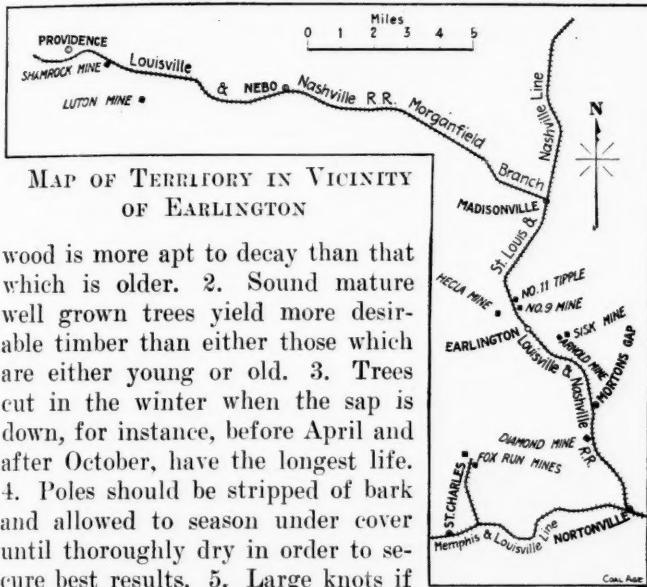
To remove the air and circulating water from the condenser and force it to the top of the cooling tower, a Christie patent high vacuum combined air and tail pump is mounted directly below the condenser. This is a horizontal double-acting brass fitted machine, in which air is admitted through a central port and is compressed up to atmospheric tension between the cone-shaped piston and the cover. The pump is unique in that the piston pushes the cover off its seating at each stroke, clearance being entirely eliminated. Make-up water for the condensing system is supplied through 5000 ft. of pipeline from a reservoir supplying house water to the town of Earlington.

High-tension transmission lines varying in length from 1 1/4 to 3 miles are carried on wooden poles placed 125 ft. apart. Ordinarily, these vary in length from 25 to 35 ft., and were cut from carefully selected and seasoned chesnut. Over rights of way, however, 45-ft. poles

are used. The tops of these poles are cut wedge shape at an angle of 45 deg., the bottom being sawed off square. In order to prevent, as far as possible, undue decay caused from the collection of moisture, the gains, the tops of the poles and the bottoms as far up as the ground line, are given two coats of creosote.

THE SPECIFICATIONS FOR POLES

In making the specifications for the line poles, the following points were taken into consideration: 1. Young



wood is more apt to decay than that which is older. 2. Sound mature well grown trees yield more desirable timber than either those which are either young or old. 3. Trees cut in the winter when the sap is down, for instance, before April and after October, have the longest life. 4. Poles should be stripped of bark and allowed to season under cover until thoroughly dry in order to secure best results. 5. Large knots if sound and trimmed smooth are not objectionable. 6. A perfectly sound dead or dry streak which does not impair the strength of the pole is not a defect.

A continuous lightning-protection system traverses the entire length of the transmission line. This consists of No. 4 galvanized wire running continuously from pole top to pole top. The top of every second pole is equipped with a metal point, projecting vertically into the air on which in turn is fastened a short piece of wire. This projecting wire and metallic rod are then connected with the earth by a ground wire down the side of the pole.

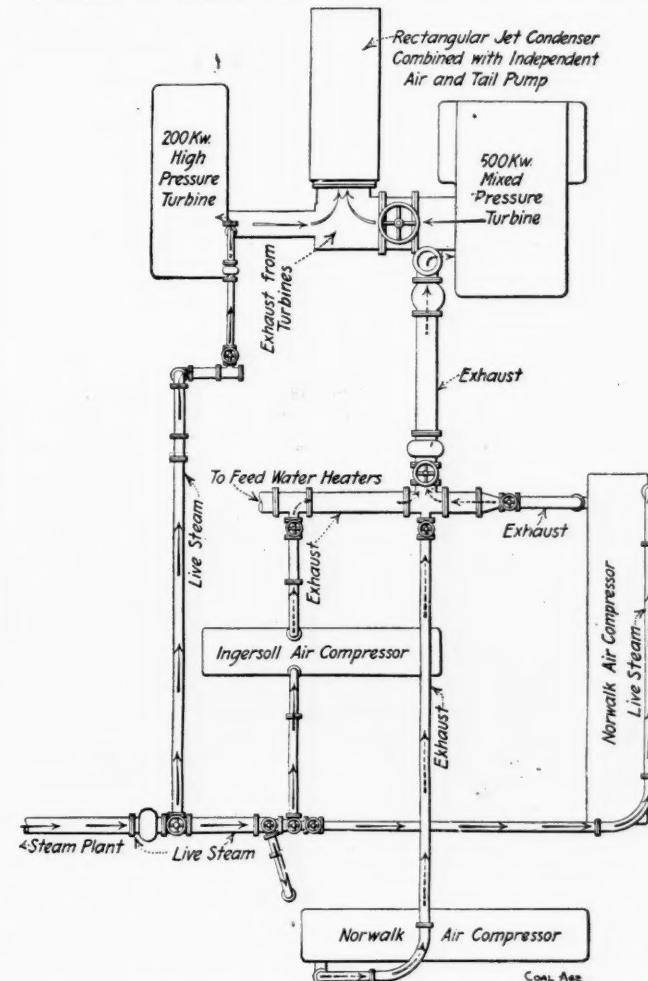
The transmission right of way running for the most part through thick forest was cleared 20 ft. upon each side of the line. In addition to this, trees which were long enough to fall across the wires, were felled. The average height of the tree determined this factor and, since forest fires of magnitude rarely occur in this territory, 40 ft. was considered sufficiently wide.

The switchboard which was furnished by the General Electric Co. is of natural black slate, and was designed along lines of standard up-to-date practice. It is located so as to face the generators, thus avoiding unnecessary steps on the part of the operator. It consists of eight panels arranged as follows: One double exciter panel; two three-phase generator panels, one regulator and exciter motor panel, one double circuit, three-phase outgoing feeder panel, one three-phase motor and exciter panel, one D.C. generator panel, and one D.C. feeder panel.

These panels are arranged in a row with synchronism indicator and ground detector on brackets.

Instrument transformers are installed in the busses at such points as to operate a power factor indicator and curve drawing polyphase wattmeter, showing total load

on station and the power factor. In addition, a vibrating reed type of frequency indicator is installed on the busses. Each outgoing feeder is protected by an aluminum cell lightning arrester of the latest design including charging resistances for arresters of all voltages. The oil switches are installed on the panel pipe supports, 5 in. behind the board. They are non-automatic for the generators, and automatic with secondary transformer trip coils for the feeders and motors.



PRINCIPAL FEATURES OF THE PIPING LAYOUT

The alternating current instruments are of the horizontal edgewist type, wattmeters and power factor indicators, operating on the well known direct-reading dynamometer principle. The ammeters and voltmeters are on the inclined coil magnetic vein principle. The direct current instruments are of the D'Arsonval type.

Aside from the main switchboard at No. 9 shaft, there are auxiliary boards at both Hecla and No. 11 mines, each of three panels, and controlling the motor-generator sets and the direct feeders supplying power to each of the two operations.

All the direct current equipment is of a single polarity controlling a negative grounded system. Circuit breakers are installed on the negative side of the generators, and the positive side of the feeders, thus providing complete protection from short circuits, wherever they may occur.

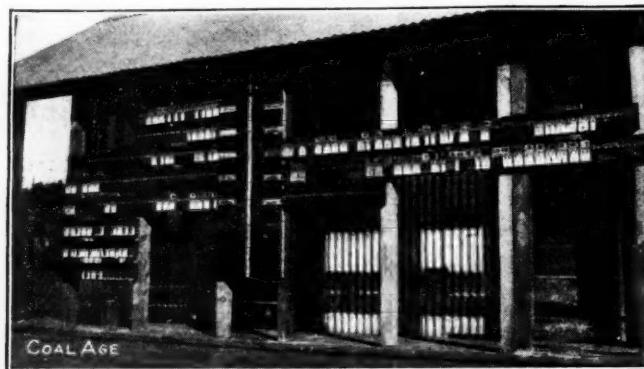
Since in the installation of this plant, conditions were encountered which were new to this field, Mr. T. M. Means, of the Randolph-Means Co., of Pittsburgh, Penn., was retained as consulting electrical engineer.

Identification Check Board

The Northwestern Improvement Co. has just installed at its Mine No. 7, Cle Elum, Washington, a new check board which is particularly suitable as a system of identification. It is in reality a representation of the mine. The central position of the board shows the main slope, manways and return airways. Travelingways are painted yellow, and return airways, red.

The levels are marked, on either side of the slope, and arms are projected therefrom, on which the miners' check numbers are hung. These arms are marked in subdivisions to correspond with the several batteries and blocks by which the level is being worked, and these subdivisions are further marked to designate the rooms which are being worked.

A blue enamel check with the miner's number thereon is left on the board at all times, and a brass check which the miner takes with him into the mine, hangs over it. No miner or company man can enter the mine without



SHOWING CHECK BOARD AT A WASHINGTON MINE

his check. By this system it is easy to tell how many men are working in the mine, and where they are distributed. If a miner changes his working place, the blue check corresponding to his check is transferred to the proper place on the board.

No part of the mine is designated upon the check board except those parts where men are working, and no numbers are hung upon the board except those numbers under which men are working.

Several short arms to one side of the main board are used for company men's checks. In case any of the checks are not hung upon the board when the miners come out from work, the foreman is supposed to ascertain whether the men are still in the mine, and if so, institute a search for them immediately.

Considerable confusion could arise in case the men do not coöperate with the management and obey instructions regarding the taking out and returning of their checks, but when they come to realize that it is to their interest to have such a method of knowing they are safe, they will not fail to do their part, just as they expect the management to do when things go wrong.

♦

The Evans Mining Class

The mining class, in charge of Evan W. Evans, mine superintendent, D. L. & W. Coal Co., Scranton, Penn., has opened its fall term under auspicious circumstances. The class has a present enrollment of 25 members, representing all classes of mining work, among which are

numbered the following: Mine machinist, pipeman, timberman, pumpman, footman or eager, driver-bosses, drivers, barn-boss, oiler, car-runners, surveyors, firebosses, miners and laborers.

The class has been growing in popularity each year, and much credit is due Supt. Evans for the disinterested effort he has put forth to teach the principles of mining to men anxious to learn. Mr. Evans has the hearty congratulations of COAL AGE in this work.

OUTCROPPINGS

To some men every day is a holiday.

♦

He who knows but little tells it quickly.

♦

Laziness has no advocate, but many friends.

♦

Have money in your head, but not in your heart.

♦

The successful man generally has more ballast than sail.

♦

Knowing a thing is nothing unless another knows you know it.

♦

Some men go to work like a balky mule and quit like a high-speed hoist.

♦

The man who starts out with the intention of doing no more than his part is apt to be satisfied with doing only a part of that.

♦

Except for a scarcity of men, the possibility of a car shortage this fall and a strike next April, together with the new Pennsylvania tax on anthracite and a few other minor things, the coal operator has nothing to worry about.

♦

A recent government publication states that "Alaskan coal fields continue to be undeveloped, according to the United States Geological Survey." A Western paraphrase of the above statement would probably be: Alaskan coal fields continue to be undeveloped because of the United States Geological Survey.

♦

Apropos of a recent decision of the New York Court against the anti-smoke laws, a correspondent in the New York "Times" writes: " * * * However turn on the smoke and the grime and the sulphur fumes; it is unconstitutional and unreasonable to interfere with anybody's business conducted at the smallest expense to the parties conducting it, and the rest of us be damned."

COMING SOCIETY MEETINGS

The Coal Mining Institute of America will hold its winter meeting at the Fort Pitt Hotel, Pittsburgh, Penn., Dec. 4 and 5. C. L. Fay, Wilkes-Barre, Penn., is secretary.

The Rocky Mountain Coal-Mining Institute has decided to postpone indefinitely the November meeting which was booked for Denver. This decision is due to the serious strike situation which now exists in Colorado. F. W. Whiteside, Denver, Colo., is secretary.

West Virginia Coal Mining Institute will hold its winter meeting at Charleston, W. Va., on Dec. 8, 9 and 10. Neil Robinson, Charleston, W. Va., is president; E. N. Zern, Morgantown, W. Va., is secretary.

Illinois Mining Institute will hold its next regular meeting in East St. Louis, Nov. 22, beginning at 9:30 a.m.; two sessions will be held, morning and afternoon. All who are interested in mining are invited. Applications for membership can be had by writing the Secretary-Treasurer, Martin Bolt, 1526 So. College St., Springfield, Ill. Headquarters will be at the Illinois Hotel. Meetings will be held in the City Hall.

EDITORIALS

Where Responsibility Is Lacking

Anthracite operators and labor leaders alike are puzzled over the serious situation which confronts them in the anthracite-coal fields of Pennsylvania. In the first year since the signing of the four-year agreement between the anthracite mine workers and anthracite operators on May 20, 1912, there were more strikes, more losses in wages and more losses in business than in the whole nine years of the previous agreements, and the trouble is continuing up to the present time.

Figures covering the first year of the existing contract, gathered from all operators, show that there were 165 separate strikes which involved 139,486 men and cost the various collieries at which they occurred 312 days of work. These figures show further that the loss in wages to the mine workers during the year on account of these numerous strikes aggregated \$886,327.92, and the loss in output from the mines amounted to 613,756 tons.

The appointment of local grievance committees, so eagerly urged by the mine workers and the labor leaders who represented them at the conference with the operators last year has proved fruitful of more strikes than any other cause. The men seem to have forgotten entirely their obligation to remain at work and subject their grievances through the proper channels to the Conciliation Board if they cannot be settled locally. It is even more discouraging to the operators that the promises and efforts of the labor leaders themselves are equally unproductive of results in the shape of continuous work.

Month after month there has been a series of "button strikes," which is simply another way of saying that, agreement or no agreement, union mine workers will not go into the mines with mine workers who are not wearing a union button. The operators have made every effort to emphasize in the minds of the men the section of the award of the Anthracite Coal-Strike Commission, which specifies that there shall be no discrimination against or interference with any person on account of membership or non-membership in any labor organization, and have printed it in half a dozen languages and posted it at the collieries. But according to them, the mine workers do not even seem to be informed of the provisions of the agreement entered into in their behalf by their representatives, in spite of the fact that this agreement was formally ratified at a general convention of the mine workers at Pottsville, Penn.

It is such examples of union domination that make mine owners in nonunion fields so determined in their resistance to the encroachments of the Mine Workers' organization. West Virginia operators, for instance, would never have fought so bitterly in their recent struggle if they had not known how union supremacy has practically bankrupted the industry in Illinois. Operators in the latter state today are principal actors in financing the fights of the United Mine Workers in Colorado and elsewhere.

There is no question but that when present anthracite

agreements expire, the operators in the hard-coal field will refuse to enter into further contracts with the miners' union, unless there is some guarantee that the men will abide by the terms of their agreement. The menace of unionism today is its irresponsibility.

♦

Labor Leaders Sentenced to Prison

We are often forced to the conclusion that Canadian courts are more fearless and less sentimental in meting out justice to those who violate the law than are similar tribunals in the United States. In this country politics often reaches as high as the judge, and as a consequence, the administration of good government is thwarted. The recent judicial action at Nanaimo, B.C., whereby a number of rioters were sentenced to the penitentiary, is a case worthy of attention of all those who advocate proper punishment for the law-breaker, no matter whether he masquerades under the guise of a union labor leader or a trust official. Justice is not justice, unless it can reach in all directions with equal effectiveness.

On Aug. 11 and 12, serious riots occurred at Ladysmith, B. C., where a number of mines are located. Arrests followed, and those who were taken into custody pleaded guilty. On Oct. 23, after a lengthy trial of the cases, Judge Howay sentenced the strike leaders to two years in the penitentiary. One of the men, Taylor by name, is vice-president of the British Columbia Federation of Labor, and vice-president of the Ladysmith local of the United Mine Workers of America. Samuel Guthrie, a second offender, is president of the local chapter of the Miners' Union.

In passing sentence on these men the judge remarked:

It is the custom when sentences are given that the judge make but little comment thereon, but in this case I am going to depart from the usual custom, for these cases are out of the ordinary, and call for a few remarks from me.

This was not an ordinary riot. It was not a sudden ebullition of pent-up feeling, but it shows all down the line a deliberate scheme, a design from one end to the other. The riots at Nanaimo, South Wellington, Extension and Ladysmith all for one purpose, were simultaneous and carried out with one line of action. Bombs were thrown, property destroyed and peaceful citizens made to flee for their lives, and a persistent state of terrorism indulged in. After the bomb-throwing at the Temperance Hotel, parades were formed, evidently for the purpose of showing your numerical strength, and that you were in charge of the situation.

Your counsel knows there is no more sympathetic man than myself, one ever ready to extend mercy, but I have read over all the depositions and find but little mercy you have shown. I read that the homes in which there was sickness were not free from missiles which you threw, and that little children hid in cupboards and under beds to escape rocks thrown upon them in merciless fullisade. The only mercy shown was the mercy of God.

I was appealed to on behalf of your wives and children, but what do I find here? I find your women singing "Drive the scabs away," and throwing rocks themselves, and these actions take away much of the strength of the appeal for mercy on your behalf because of your women. The evidence shows not only that you have been rioting, but that a far more serious charge might have been laid against you.

I recognize I have a duty to perform, painful in the extreme, but the law-abiding people in this community must be protected and punishment meted out, so that there may be no further occurrence of these lawless riots.

When our American courts learn to fulfill their duty in the same spirit of fearlessness and fairness, shown by Judge Howay, the strike-riot will cease to be an effective argument in the settlement of labor troubles at coal mines. We all should be ashamed of a civilization that will not accept some system of common-sense arbitration in preference to methods, based on violence and bloodshed.

♦

The Mine Cave Problem

The mine-cave problem, in Scranton, Penn., has recently assumed an interesting aspect, at least as viewed from a philosophical standpoint. With all justice to the large coal corporations operating in and about that region, it must be said that the stolid indifference of the management has at last aroused the merited indignation of the people whose property and lives are endangered by their greed, to a pitch that demands recognition.

The increasing menace to the surface rights and holdings, growing out of the unconscionable robbing of the pillars in the underlying mine workings, resulted first in the appointment of a so-called "Mine Cave Commission." After two years of patient waiting and endurance, the sufferers are asking the question: "What has the Mine Cave Commission done to relieve the situation and render lives and property in Scranton more secure?" This commission has been maintained at an annual expense of \$7500, and further than making an extended investigation of the mine workings and reporting their condition, nothing has been accomplished of a tangible nature.

The feelings of the residents in West Scranton, who are the worst sufferers from surface settlement, are now wrought up to a pitch that compelled the Scranton Board of Trade, in defence of the business interests of Scranton, to take active steps looking to the adjustment of the conflicting interests of the respective owners of the surface and mineral rights. At a recent meeting of the board, the president, R. E. Weeks, referred to the mine-cave problem as "a danger that is overestimated by people out of the city and underestimated by many people in the city."

The entire question of liability for surface support in the extraction of the underlying coal has been very much confused by the fact that the principal surface holdings of residents in the city, have been acquired by purchase from the coal companies, who reserved the mineral rights, which reservation was made a clause of the deed to the surface, in each case. It has been claimed by the coal companies that the reservation of the mineral rights included the right to remove said mineral without liability for damage to the surface. This claim has received more or less support as being the logical result of purchasing surface property with such a reservation in the deed. It was claimed that the purchaser did so with his eyes open and in full knowledge of the possible results growing out of the extraction of the coal.

An important decision of the State Supreme Court, made recently, however, is more favorable to the surface holder. The Supreme Court has held that surface support is an inherent right of the purchaser. The grantor who owns in fee both surface and coal, cannot reserve to himself the inherent right of the grantee to surface support. If he attempted to do so, the court would restore those rights to the grantee.

This decision of the Supreme Court is in direct line with the argument advanced editorially, by COAL AGE, Nov. 9, 1912, p. 651, which reads as follows:

It may be an unwritten law, as far as the mine-cave problem is concerned: but, has a purchaser any power to waive an inherent right on which the value of his purchase depends? Does the vendor give value for value when he demands such waiver? Is such a waiver binding, notwithstanding the fact that it is written in and made a part of the contract of sale?

* * * * In all exchange it is binding on both parties alike to give value for value. * * * *

It is a question whether there is a lawful exchange in a contract that contemplates the subsequent right of the vendor to damage the property that has become the rightful possession of the vendee. A waiver conveying such right would seem to have no legal or moral binding, because of its being contrary to the recognized and established principles of equity and justice.

We believe thoroughly in the inherent rights of the individual, which are as sacred as the constitutional rights of the citizen. It is a principle of law that such rights cannot be waived or bartered away at will by the individual, and a contract containing such waiver naturally has no standing in court. It has been suggested by some that, while it may be granted, that the clause in a deed, reserving the mineral rights underlying the property, is not binding and does not exempt the grantor from liability for damage to said property; a clause releasing the grantor from such liability and subscribed to by the grantee would be effective. We opine, however, as stated above, that such release or waiver is without force in law. We base this opinion on the fundamental principle of commercial interchange, which demands, value for value and permits no gamble on a purchase.

The waiving of the right to surface support by the purchaser of a property is equivalent to writing a contract that would menace the valuation of that property, for years to come. Admitting for the sake of argument that allowance is made in the purchase price for such possible deterioration of value, the fact remains that the lives of the dwellers on the surface is endangered by the writing of such contract; because, the release of the owner of the mineral rights, from just liability for damage arising from the extraction of said mineral, gives to him a free hand, by reason of which the stability of the surface is jeopardized to a greater degree than would otherwise be the case.

It is true that the possessor of mineral wealth is unable to realize on his possession unless he can take that mineral from Nature's storehouse. But the extraction of the mineral must form a part of the consideration in determining its value and such extraction must not entail damage to adjoining property. The value of such mineral in place is necessarily affected by the paramount condition of its availability.

The large coal corporations operating at Scranton and elsewhere, are, we believe, too wise and broad minded to attempt to dodge the issue. We believe the management will eventually meet the surface dwellers and make an equitable adjustment of their conflicting interests. In this way only can the coal industry thrive. We believe the refusal to come to such an equitable understanding and adjustment of claims could only result in dishonor to the great coal industry.

The Mine Cave Commission should at this time exert themselves and prove their efficiency as a commission appointed in the interests of the people and the great coal industry that dominates not only Scranton but the entire anthracite valley.

SOCIOLOGICAL DEPARTMENT

Technical and Industrial Education

By H. V. GUMMERE*

Everyone who has studied the subject at all knows the intimate relation between the industrial standing of our country and the knowledge and the efficiency of those engaged in its industries. While this relation holds for all, from the humblest unskilled operative up to the corporation manager, it seems especially important to have those in the lower places realize it, since their educational opportunities are certain to have been the more limited. Thousands of boys yearly leave the lower grades in schools to go to work. To most of these will come later a keen realization of lost opportunities and the absolute necessity of making up for them, for they enter commercial or industrial occupations utterly unfitted for advancement to higher positions.

What they can do, how well their capabilities can be developed, will, in most cases, depend on what possibilities their employer brings to their attention and makes available. Most employers are well aware of this and try to help those who work for them to find ways of gaining the knowledge they need. Experience has shown that this pays merely as a business proposition. A young fellow whose character and habits of life are known, whose personality and ability have been tried out, is usually much to be preferred to any stranger when appointments are made to positions of large responsibility.

OBJECTIONS TO INSTITUTES AND CORPORATION SCHOOLS

Associations or clubs, whether local or branches of a national body, which meet periodically to hear an address or participate in a discussion are at best educational only in a supplementary way. Any study done in connection with them is not consecutive and usually to be beneficial needs a foundation which is too often lacking. The corporation school is rather new, and for every corporation large enough to organize and conduct one, has interesting possibilities; the tendency, however, is always to train for immediate usefulness in detail rather than in broad principles, while the variety of courses which can be offered is bound to be small. If, for example, the school is organized to benefit the workers in the shop, what shall be done with those in the business office who need an entirely different training?

A correspondence school, either within the corporation or outside its control, offers the only means of systematic study for those residing at considerable distance from the large centers of population, or where the number of persons interested in a given kind of work is too few to warrant the formation of a regular class. When schools can be reached where experienced teachers are in charge, where direct recitation methods are used, and where a variety of courses can be offered in a systematic way, the establishment of regular classes in off-duty hours of

fers the best method of giving the desired instruction. These usually take the form of night schools or evening classes.

ADVANTAGES OF NIGHT SCHOOLS

Night schools have flourished in the last 20 years wherever established. Their advantages are fully recognized by those who have been attending them. Such are: Immediate help over difficulties, procured by having an instructor at hand; the opportunity to learn by the mistakes of others in the class; compulsory regularity in study, so important even to a very earnest student; the stimulus of numbers; the desire of each student to stand well in his class; the possibility of drill; and many others. Such school work, offered not only in the evening, but in the late afternoon as well, is likely to have a remarkable growth in the future.

SOME UNANSWERED PROBLEMS

To the general public the work which is being done as regards both scope and quality remains practically an unknown quantity at the present time. Employers are just waking up to what has been and can be done in this way. No matter what educational agency is used, a number of problems arise which can be solved only by the coöperation of employers, employees and teachers. What courses are needed? How much time can be required of busy men for school work? What fees are suitable? How shall those be accommodated who have long distances to travel and high carfares to pay? Should classes be established in locations remote from the schools, in shops or in offices, but under the control of their trained faculties? These are some of the problems which have never been fully answered. The answers would probably differ with a change in locality. Other questions are almost wholly the concern of the employer, such as: What school and what kind of education can best help my employees to gain what I want them to know? Which of them can profit most by systematic school work? How can I help them to get it?

A CONFERENCE ON INDUSTRIAL EDUCATION

The only satisfactory way to reach a conclusion on these matters is to have some common meeting ground for all interests where free discussion can have full play. In Philadelphia steps to this end have already been taken. Last spring representatives of the Central Educational Institute of the Young Men's Christian Association, Drexel Institute, the Franklin Institute, School of Industrial Arts, Spring Garden Institute, Temple University and the Wagner Free Institute of Science, joined with representatives of the Philadelphia Trades Schools and the Philadelphia and Camden Public Schools in arranging meetings for the purpose of becoming acquainted with one another's work and the educational problems employers have to face.

Wishing to avail themselves of the wide resources of the Public Education Association of Philadelphia, mem-

*Secretary, The Industrial & Technical Education Conference of the Public Education Association of Philadelphia, Penn., 1015 Witherspoon Bldg., Philadelphia, Penn.

bers of the faculties of the participating institutions are now organizing a section of that association to be known as The Industrial and Technical Education Conference of the Public Education Association. The membership is to consist of educators and employers, and the purpose is to seek earnestly the solution of the problems arising from the needs of the vast numbers of young people who have never had proper opportunities for securing that knowledge which will pave the way to better service and higher responsibilities.

It is hoped that the movement thus started will spread to include not only local representatives, but all those employers whose employees find in the large cities opportunities which cannot be offered nearer. This means extending the work to a great many miles from Philadelphia, for classes could easily be arranged outside the city, managed by experienced teachers who are specialists in any given line of instruction.



The Panther Valley Mining Institute Banquet

The second annual banquet of the Panther Valley Mining Institute was held in the Armory at Tamaqua, Penn. on Saturday evening Oct. 18. Although the night was rainy and exceedingly disagreeable, between 300 and 400 members of the institute and guests were present.

After a season of gastronomic activity, which was thoroughly enjoyed by all in attendance, W. J. Whildin called the meeting to order and made a few remarks upon the progress which had been made during the past year.

The Panther Valley Mining Institute is an organization for men and boys which has for its object (1) To advance the welfare of the men employed in and about the mines in the anthracite coal fields, and (2) to advance the interests of the mining industry itself.

To accomplish this end schools have been organized holding their sessions upon two evenings each week. In addition to this, regular meetings of the Institute are held from time to time when papers are presented upon subjects pertinent to mining, and calling out discussions upon various mining subjects.

During the past year these meetings were held each month, and the papers read covered such objects as "First-aid Work," "Mining," "Ventilation," "Method of Mining the Mammoth Vein," "Transportation," "Electric Haulage," and the "Geology of the Panther Creek Valley." Last year there was a total enrollment in the schools of 86, and an average attendance of 46. There were four departments in these schools; the primary, the mining, the electrical, and the mechanical departments, all well patronized, the electrical and mining being probably the most popular. An idea of what this school is doing for the men may be gained from the results obtained in the mining department. Fifteen members of the class in mining this spring took the examination for mine foreman's and assistant mine foreman's certificates. Every one of the fifteen passed. Not only this, but the mine examining board stated that these men's papers were the best they had ever read. Furthermore, seven out of the fifteen are now filling positions and have filled them during the past several months as a result of their being able to qualify and having these certificates.

Although any one, regardless of where or by whom he may be employed, may become a member of this Insti-

tute and attend its school and meetings, the membership is nevertheless made up very largely of employees of the Lehigh Coal & Navigation Co. This firm, therefore, knowing that an educated man is much more efficient than an ignorant one, does all in its power to promote the welfare and encourage the membership of the Institute.

After Mr. Wildin's remarks, speeches were made by Edwin Ludlow, vice-president of the Lehigh Coal & Navigation Co., S. D. Warriner, president of the same company, Prof. Preston Lambert, of Lehigh University, and George M. Roads, attorney-at-law.

All of these gentlemen spoke of the universal regard for the man who, whatever his station in life might be, had the ambition and the stamina to rise through the improvement of his mental facilities to a higher plane in his work and in the community. Mr. Roads called particular attention to the miner's sturdiness of character and persistence of purpose in time of need which was well portrayed in the words of the Institute Song which had just been sung:

"When their comrades are in danger,
Without thought of praise, or gain,
The faithful boss and miner
At their posts will all remain."

A Motor Ambulance for Colliery First Aid

An ambulance car for colliery purposes has recently been built at Doncaster, England. It is made from kiln-dried birch, varnished natural color. The inside of the body is made smooth so that it can be readily cleaned. The equipment consists of two collapsible stretchers of the St. John Ambulance Society type, fitted with telescopic handles and included in the ambulance equipment are two sets of splints, liniment, bandages, hot-water bottle, etc. Immediately behind the front windows is an moveable seat for an attendant.

The ambulance is lighted inside by electricity and special provision is made for ventilation by means of louvers over the main windows which are controlled from the inside by shutters. Folding steps are provided at the rear. They are made very wide and have broad treads so that the entrance to and from the ambulance is as easy as possible. Two large doors are fitted at the rear with the same idea in mind. The springs on the vehicle are extra long and are provided with shock absorbers, the shelves being covered with seat cushions and the stretchers placed under them, thus making it possible in an emergency to take the members of the rescue brigade from one colliery to another.

The chassis is fitted with a 15.9 hp. engine having four cylinders cast in pairs with a bore of 80 mm. (3.15 in.) and a stroke of 130 mm. (5.11 in.). Thermo-siphon cooling is used; all valves are enclosed; the tappet valves are adjustable, the bearing surfaces are of ample dimensions, and are white-metalled. The lubrication is by forced feed, four speeds and reverse are provided and the chassis frame is specially constructed of a suitable length, the rear axle being of special strength and worn driven. Every attempt has been made by Messrs. E. W. Jackson & Son, of Doncaster, England, the constructors, to produce an easy riding vehicle adapted to the special purpose for which it is designed.

Lackawanna Steel Co.'s Contest

In remarkably realistic tests the 30 first-aid teams of the Ellsworth Collieries Co. demonstrated to an assemblage of nearly 5000 people on Friday, Oct. 17, the methods to be followed after an explosion or other accident incident to the mining industry.

The towns of Cokeburg and Ellsworth observed a holiday, and the residents of the towns as well as the school children witnessed the exhibition.

A procession of 880 scholars from Ellsworth and Cokeburg schools passed in review before those assembled and were given a great ovation. Each of the rescue first-aid teams then performed in the open field, and after completing its exhibition reported to the field hospital in charge of Drs. French, Rote and Kirby, and then the commissary department of the company served a lunch which had been prepared by the domestic-science pupils of the two schools.

Then followed an explosion in an improvised mine that had been constructed of brattice cloth the width and height of an ordinary gangway. Men supposed to have been overcome by fumes and smoke were carried from the mine by the helmetmen, the first-aid men reviving them with respirators and pulmometers. The rescue men entered the mine which was 200 ft. long, with a life line. A number of men belonging to a rescue team were represented as being caught in a fall of timber and other débris and a rescue was effected.

The judges of the work of the teams were Dr. C. C. Gans, of Uniontown; Dr. A. E. Baer, of Uniontown, and Dr. Geo. Hayes, of Monongahela.

D. L. & W. First-Aid Meet

Employees of the Delaware, Lackawanna & Western R.R. Coal Department, working in such of their mines as are situated between the Pettebone and the Nanticoke collieries, participated in an interesting first-aid contest at the Nanticoke State Armory on Mitchell Day, October 29, in the presence of a large number of spectators, the contestants making an admirable showing.

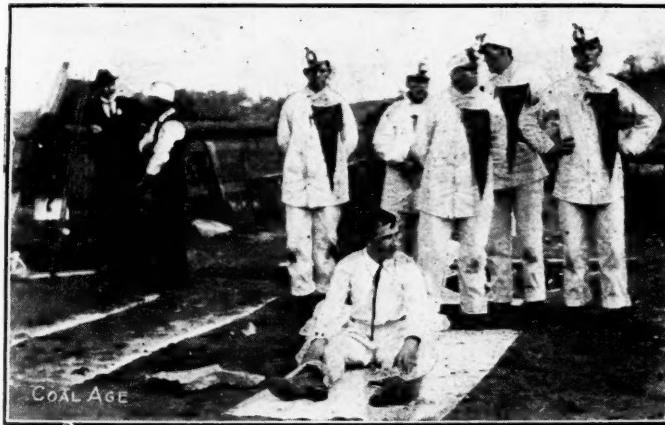
The events were as follows:—

One-Man Event—Man has been overcome by gas in a low place, and has become unconscious. On falling he received a blow on the right temple. Drag him 10 ft. out of gas, and carry him 50 ft. and administer artificial respiration for one minute. This work to be done as you would do it in the mine.

Two-Man Event—Compound fracture of the left collar bone and fracture of the jaw. (Barton bandage.)

Full-Team Event—First. Gas burns on face, hands, arms and body. Second. Fractured ribs on left side, and fracture exposing ulna bone. Third. Compound fracture of left leg 6 in. below the knee, and simple fracture of right upper arm. Fourth. After a fall of rock the patient is found with the following injuries: Simple fracture of right forearm, both bones; severe cut in palm of left hand, bleeding in jets; simple fracture of left leg, 4 in. above the knee, and lacerations of the head.

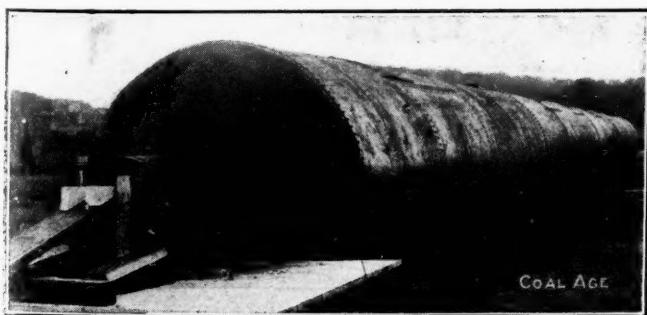
The one-man event was won by William Jones, of the Bliss Colliery, who was awarded a gold signet ring. The two-man event was won by William L. James and David J. Williams, of the Truesdale. Both were given watch fobs. The full team event was won by No. 1 and 2 shaft team, of the Truesdale. The best general average was made by the Bliss colliery team, of which the captain is William Hill. The individuals in this team each received a prize consisting of a first-aid outfit.



THE JELlico CREEK TEAM READY TO DEMONSTRATE



HOW THE FIELD WAS ARRANGED FOR THE CONTEST



THE STEEL EXPLOSION GALLERY USED TO EXHIBIT THE EFFECT OF REPLACING BLACK POWDER BY PERMISSIBLE EXPLOSIVES

Scenes at the Knoxville Meet

The meet held by the Association of Tennessee Mine Foremen, the Bureau of Mines and the American Red Cross, at Knoxville, was skillfully planned. It will be noted how methodically the grounds were marked so as to place the teams without confusion. The canon used at the Pittsburgh meet in 1911 was set up at Knoxville and again proved the superiority of permissible explosives. This exhibit was the first of the kind held in the South and a committee was formed to examine the powder, the coal dust, the clay and the loading of the canon. The precautions taken by this committee served more fully to convince the miners that coal dust is dangerous even when gas is not present.

DISCUSSION BY READERS

Starting Fan after Explosion

Letter No. 7—An experience of nearly 40 years in coal mining, eight-tenths of which has been in an official capacity, has made me deeply interested in the welfare of miners. Having engaged, many times, in mine-rescue work, following explosions and inundation of the workings, I am particularly interested in whatever pertains to such work.

An explosion in a mine results in the loss to the operator, not only of his workmen, but also of much of the mine equipment. The one makes it difficult for him to again operate under the same favorable conditions, as before, even when he has repaired the damage done to the mine and its equipment. The other may have crippled him financially, or so embarrassed him that he must operate at a great disadvantage, for a long time to come.

In the rescue work in which I have engaged, it has always been my experience that the fresh-air current is of the first importance. In most of this work, we did not have the help of oxygen helmets, or any other breathing devices. Were it not for the fresh-air current that we carried with us into the mine, we could not have survived. The work had to be done with care and caution. The logical way is to consider the surroundings of the zone in which the explosion has occurred. The mine foremen and his assistants are the men who are or should be acquainted with the conditions existing in the mine. Briefly, the questions to be considered are: Was the mine free from gas and dust, in a general way? Was the mine a dry and dusty one? Was the mine damp or very wet?

My experience has proved that the answer to these questions are of the greatest importance to the men who are to undertake the work of rescue, and who must decide the question of whether or not the fan should be started immediately after the explosion. Human life may depend on this decision. In answering the question in reference to starting the fan as quickly as it can be repaired, let us consider different conditions.

1. Assume the mine generates some gas and is dry and dusty. In this case, whether the fan is blowing or exhausting, it would be better to explore the mine a certain distance at least, to ascertain, as far as possible, its condition. The information thus gained would enable you to arrive at an intelligent decision. If fire exists in the mine, this should be extinguished before starting the fan.

2. The mine may be divided into two sections—rise and dip workings. If the dip workings were damp or wet, so that pumps were required to keep the places dry, I would have no fear in following the air current as we restored the ventilation by repairing the doors and stoppings in that section. The rise workings would be more dangerous to penetrate and great caution would be required in attempting to explore them.

In case electricity is used in the mine, it would be important to have the current shut off promptly to avoid the danger of the ignition of gas that is accumulating in the

mine. The question of starting the fan would depend on the conditions I have named, and experience must be the guide.

ROBT. W. LIGHTBURN.

Adelaide, Penn.

Collapsible Stoppings

Letter No. 8—I have been greatly interested in the discussion of this subject in COAL AGE, but have not been converted to the idea of building such stoppings in mines. The first consideration is to make the mine safe for work. Whether the mine is gaseous and liable to a dust explosion, or whether the mine may be considered as practically safe from the explosion of gas or dust, does not, to my mind, alter the question.

In my opinion, all stoppings should be built in the center of the crosscut where they will be most protected. They should be constructed of incombustible material and built in a manner to stand all shocks incident to coal mining. If possible, the strength of the stopping should be such that it will withstand the force of a small local explosion.

It is important in building stoppings to start the foundation on the solid rock floor; and not, as I have often seen done, leave two or three inches of dirt under the walls. My reason for building a solid stopping of concrete, or stone or brick masonry is that this class of stoppings will maintain the circulation of the air better and keep the working face more clear of gas, thereby making an explosion less liable to occur. A light collapsible stopping will necessarily leak air in a short time, owing to the settlement of the roof or of the stopping itself. In case of a local explosion of gas or dust, such permanent stoppings will not ordinarily be destroyed, and the rescue party will be able to enter the mine more promptly and with less danger, because the air current will still be circulating through the workings. Men working in such a mine would have a greater chance to escape than where the stoppings have been built light and are destroyed by the force of the explosion.

A. MINER.

Scranton, Penn.

The Safety Lamp and the Eyesight

I have been much interested in the numerous letters that have been published relating to the effect of the continued use of the safety lamp on the eyesight of miners; and noticed one letter from a brother miner, at Wylam, Ala., who claims that the continued use of the safety lamp is the direct cause of the disease known as "miners' nystagmus." While such a statement may be true, in some exceptional cases, I believe the fact is not proved, as there are other causes common to coal mining that may be responsible for the trouble.

My experience has led me to believe that the practice of "solid shooting" with black powder may be one cause

of this trouble; especially where the ventilation of the mine is not the best and the atmosphere is full of powder smoke, for the most of the day. I remember some 30 or 40 years ago, this was the condition in the Belleville Track mine near St. Louis. The coal was shot off the solid with black powder, and the mine air was thick with powder smoke. As a result, the miners were much troubled with a continual winking of the eye, and many suffered from a burning feeling and weak eyes. On coming to daylight, they were like blind men. I remember that some who did not remain at the mine recovered, while others were not as fortunate.

Scotch and English miners suffer much from fires. Many are troubled with blisters on their eyes, caused from undermining and cutting hard seams of coal. They could not look steadily at a safety lamp or a naked light. I worked 15 years in Scotch mines and 45 years in mines in the United States, and have used the safety lamp for nearly 50 years, and have not found that its use has injured my sight, in the least degree.

The fireboss, in examining a place for gas must look steadily at the light of the lamp, and it seems to me would be in more danger of the light affecting his eyes than the miner who seldom looks at the safety lamp; but sets it 6 or 8 ft. away from his work and only gives it an occasional glance to see that it is all right. But, strange to say, I have never heard a fireboss of any experience complain that the safety lamp hurt his eyes.

In my opinion, the miner's eyesight is injured more by the semidarkness and the dust and smoke in which he must work. I believe that these conditions have as much or more to do with the generally poor eyesight of miners than the continued use of the safety lamp.

GEORGE TEMPLETON MAIN.

Republic, Ala.

*

To Prevent Gas and Dust Explosions

The subject of the prevention of accidents to employees in a gaseous and dusty coal mine, is undoubtedly one of the most important in mining. By *important* I do not mean that there are more men injured and killed by explosions of gas and dust than from other causes incident to mining, although the public, at large, seem to be under that impression. The reason is that when men are injured or killed by falls of slate or coal, or some other mine accident, there is little heard of it; but should an explosion of gas or dust occur, in any part of the world, all the newspapers throughout the country are at once filled with big head lines "Another Mine Explosion," etc., giving the number of killed and injured. That is why I say this subject is an important one; because it is up to the officials of all coal companies, from the president down to the assistant foreman in the mine, to show the public that the coal-mining industry can be handled in a manner as free from accidents as any other business or industry.

Now, in the operation of a mine, the officials on the ground are and should be the men who should do their utmost to prevent accidents occurring; because the higher officials are not at the mine daily and are not, therefore, acquainted with the different conditions that constantly arise and which may cause the death or injury of one or more of their employees. The management lays down certain rules and gives general instructions how the mines

are to be operated. If, however, mine officials—superintendents, mine foremen, assistant foremen and firebosses become careless, it will be difficult to convince the world that coal mines can be run without accident.

To prevent accidents to employees, from explosions of gas or dust, the most important consideration is the ventilation of the mine workings. In order to have good ventilation and to remove all obnoxious gases that the coal gives off, it is necessary, when opening a gaseous seam, to install a fan large enough to give sufficient air; and also to drive all airways large enough to make it possible to split the air current when needed, so as to ventilate each section separately, and do away with so many doors by building overcasts at the mouth of each section. Every foreman should see that the stoppings are put up in good shape and that no stopping is built under a draw slate, or any other loose slate. It is an easy matter for a foreman or fireboss to make his inspection and report everything in good shape; but while he is visiting some other section, possibly a piece of bad slate, which he did not notice, breaks down one of the stoppings and short-circuits the air. Then, perhaps, by the time the miners arrive at their working places, enough gas has accumulated to cause a serious explosion when it comes in contact with an open light, possibly killing every person in that split. Another important advantage in splitting the air current is that in case an explosion should occur, caused either by the negligence or carelessness of the foreman, or his assistants or otherwise, it will tend to confine the explosion to that section or split in which it occurs. There is no doubt in my mind but that nearly all accidents can be avoided if the mine foremen attend properly to their business.

About 17 years ago, I was a miner in a gaseous mine, in which open lights were used, and it did not take me long to find out that the seam was liberating a considerable amount of gas. After working for some time, I started to visit some of the workings in the section where I was working. I went into a room some 200 ft. in length, with an open light on my cap. I had proceeded up the room a hundred feet or more, when the miner at the face suddenly shouted, "Take that lamp off your head." I did so in a hurry and walked up to the face. The miner then showed me a chalk mark on a prop he had setting close to the face, showing how low the gas was found that morning by the fireboss. The chalk line was about a foot from the top. I gathered up my tools and left that mine in a hurry; as I came to the conclusion quickly that, some day, there would be an explosion there if things were not remedied. About two years later, the newspapers were filled with the account of an explosion that occurred in that mine, killing about 60 men. There is no doubt in my mind but that the fireboss' chalk mark kept coming down the post, till finally enough gas had accumulated to blow up the mine.

It is my opinion that all gases should be treated as dangerous; and no matter how slight the traces may be, men should be taught to treat them as dangerous. If all shot-holes are properly charged, with a so called safety powder and properly tamped, the dust removed, and all precautions taken and rules carried out, we are certain to make a good showing during the year 1913.

A. G. HAHN, Mine Foreman,
United States Coal & Coke Co.

Gary, W. Va.

The Certificate Law

The article on The Certificate Law, by Charlton Dixon, Coal Age, Oct. 25, p. 604, is timely and very much to the point. Mr. Dixon says: "The certificate law, so prevalent in most mining states, practically confines men to a certain prescribed territory."

The coal fields of Tennessee and Kentucky furnish an apt illustration of the workings of the present law. The Tennessee coal lies principally in the eastern part of the state and in close proximity to the coal fields of southeastern Kentucky. These are, in fact, the same coal fields and are taken together to form what is known as District No. 19 of the United Mine Workers' Organization.

There are coal mines all along the border line dividing these two states. A man may hold a first-class certificate, allowing him to fill the position of mine foreman in Tennessee; but he cannot act in that capacity in an adjoining mine across the state line, without again going to the expense of another examination before another examining board in Kentucky. Likewise, a certified mine foreman in Kentucky ceases to be eligible to that position the moment he steps across the state line into Tennessee.

Mr. Dixon suggests that each state should incorporate

in their statutes, some provision for honoring the bona-fide certificates of other states. I believe this is a good suggestion, but before that can be done, there should be an effort made to standardize the examinations held in the different states, in order to make them as nearly uniform as possible, in so far as they apply to the same position and practically the same conditions.

Not long ago, there was a man who took the examination in Tennessee and was awarded a second-class (Class B) certificate. A few years later, after a change in the administration of the state government and the appointment of an entirely new board of examiners, this man desired to go before the board and take the examination for a Class A certificate. In this examination, he failed to make a sufficient average to entitle him to even a Class B Certificate, which he already held under the previous examination.

This incident serves to illustrate the great difference in the examinations given in the same state, when the examining board is changed by a change of polities. In this connection, however, it may be stated that, in other professions and callings, certificates granted in one state are not good in another state. It would be well to have this question thoroughly discussed in COAL AGE.

U. S. WILSON.

Briceville, Tenn.



Study Course in Coal Mining

BY J. T. BEARD

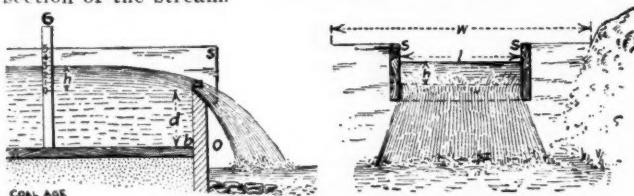
The Coal Age Pocket Book

WEIR MEASUREMENT

It is a common practice to measure the quantity of water flowing in a ditch or stream by constructing a weir similar to that shown in the accompanying figure, and allowing all of the water to flow over the weir. When a uniform flow has been established certain measurements are carefully taken and from these measurements the quantity of the flowing stream is calculated, in cubic feet per second, or gallons per minute, as desired.

Essential Points—In order to obtain fairly accurate results, it is important to observe certain conditions, which may be described as follows:

(a) The velocity with which the water approaches the weir called the "velocity of approach" must be reduced to a minimum; and to do this, the cross-section of the water in the weir or what may be called the "wetted area" of cross-section must be small in comparison with the area of the cross-section of the stream.



LONGITUDINAL CROSS-SECTION AND FRONT VIEW OF WEIR, SHOWING IMPORTANT DIMENSIONS

Referring to the figure, the wetted sectional area is represented by $l \times h = lh$, and that of the stream by $w(h + d)$. Good results are obtained when h does not exceed one-half d , and l does not exceed one-third w . The wetted area of the weir will then not exceed one-ninth of that of the stream, and the average stream velocity or velocity of approach will not exceed that proportion of the velocity of the water flowing through the weir.

(b) In order to avoid, as much as possible, the effect that an inclined surface would have to increase the velocity of the water flowing through the weir, beyond that due to the head h , the faces both back and front of the weir dam (ab) must be vertical; and to avoid any undue disturbance of the steady flow, the upper edge of the dam is beveled as shown at a, in the figure. As a further means of maintaining a uniformly steady flow that will represent more correctly the velocity due to the height h , the vertical sides (ss) are extended a short distance beyond the crest (a) of the dam. Also, the empty space (o) under the waterfall must be open at the sides, or, otherwise, a vacuous condition will be created owing to the partial exhaustion of the air by the falling water, which would act to increase the flow of water over the dam.

The Coal Age Pocket Book

Measuring the Head h —When the precautions mentioned have all been taken the velocity of the water flowing through the weir is practically that due to the height h or the vertical height of the surface level of the water above the crest (a) of the dam. To measure this height accurately a rod or gage (G) is usually set up in the stream a few feet above the dam. The rod is graduated in feet, the zero of the scale being level with the crest (a), as shown in the figure. To avoid the formation of ripples that would interfere with the accurate reading of the gage, the up-stream edge is beveled and the rod is made very thin.

Error Due to Velocity of Approach—Except in a still-water basin, the water at the gage always has more or less velocity (velocity of approach) for which allowance must be made if accuracy is desired. It has been shown by numerous experiments that when the velocity of approach does not exceed 1 ft. per sec. the velocity of discharge is equal to that due to the height h , within 2 per cent. of error.

Calculation of Quantity—When great accuracy is not desired and the velocity of approach at the entrance to the weir is small the quantity of water flowing through the weir may be calculated, in cubic feet per second, by the formula

$$q = 3lh\sqrt{h} \quad (1)$$

in which q = quantity of water flowing (cu.ft. per sec.); l = length of weir (ft.); and h = vertical height (ft.) of level surface above edge or crest of weir.

When it is desired to make correction for the velocity of approach, that velocity can be closely estimated by dividing the quantity of flow, as calculated by formula 1, by the cross-section (lh) of the weir, which gives the formula for finding the velocity (v) of approach,

$$v = 3\sqrt{h}$$

It is then necessary to calculate the head h_1 due to this velocity, as follows:

$$h_1 = \frac{v^2}{2g} = \frac{(3\sqrt{h})^2}{2 \times 32.16} = 0.14h$$

The head h_1 , calculated as producing the velocity of approach, must then be added to the head h , as measured by the gage, to obtain the total head (H), which is, approximately, the actual head producing the flow through the weir; thus,

$$H = h + h_1 = h + 0.14h = 1.14h$$

The quantity of water passing over the weir is then found by substituting this total head H for h in formula 1; thus,

$$q = 3IH\sqrt{H} = 3.65lh\sqrt{H} \text{ cu.ft. per sec.}$$

This last formula is practically correct for finding the approximate flow of water over a weir constructed according to the diagram shown in the accompanying figure.

The following formula is derived from the above and expresses the quantity of water flowing through the weir, in gallons (G) per minute.

$$G = 1640h\sqrt{h} \text{ gal. per min.}$$

EXAMINATION QUESTIONS

Examinations for Mine Manager, Mine Examiner and Hoisting Engineer, Held at Springfield, Ill., Sept. 8, 1913

(Selected Questions)

Ques.—An entry is parallel to a land line and 150 ft. from it. If the rooms turned off the entry run at an angle of 45 deg. with the entry; what distance can they be driven, allowing a barrier of 10 ft.?

Ans.—Deducting the 10 ft. for the width of the barrier pillar leaves $150 - 10 = 140$ ft. of coal to be taken out between the entry and the barrier. The length of each room measured on the straight rib is $140 \div \sin 45^\circ = 140 \div 0.707 = 198$ ft. This measurement is taken into the extreme corner and the face of the coal must then be kept parallel to the entry. If, however, the face of the room is squared with the track, the length will be less by an amount equal to the width of the room. Thus, for a room 24 ft. wide, the distance from the entry to the face would be $198 - 24 = 174$ ft.

Ques.—What are the uses of the following instruments, in connection with coal mines: the anemometer, thermometer, barometer and water gage?

Ans.—The anemometer is used to ascertain the velocity of the air current, in feet per minute. The thermometer is used to find the temperature of the air current and the mine air, at different points in the workings. The barometer indicates the pressure of the atmosphere, in inches of mercury column. The water gage shows the difference of pressure between the fan drift and the atmosphere, or between the intake and return airways, at the point where the observation is taken. It indicates the ventilating pressure in by from that point, measured in inches of water column.

Ques.—What diameter of cylinder will be required to develop 50 hp., in a noncondensing engine that has a stroke of 4 ft. and makes 45 r.p.m., when working under a mean effective pressure of 30 lb. per sq.in.?

Ans.—Since the engine makes two strokes for each revolution, the piston travel is $2 \times 45 \times 4 = 360$ ft. per min. Fifty horsepower is equivalent to $50 \times 33,000 = 1,650,000$ ft.-lb. per min. To develop this power at a speed of 360 ft. per min. will require a total pressure on the piston of

$$pa = \frac{1,650,000}{360} = 4583 + \text{lb.}$$

For a mean effective pressure of 30 lb. per sq.in., the required area of the piston or cylinder is

$$a = \frac{4583}{30} = 152.77 + \text{sq.in.}$$

The required diameter of the cylinder is, then,

$$d = \sqrt{\frac{152.77}{0.7854}} = 13.94, \text{ say } 14 \text{ in.}$$

Ques.—Describe a synclinal and an anticlinal axis, respectively.

Ans.—A "syncline," in geology, is a trough or valley formed by the dip of the strata toward the same line, which is the axis of the syncline or the "synclinal axis." In distinction from this, an "anticline" is a ridge from which the strata dip away on each side. The ridge line or a line parallel thereto and symmetrical to the sloping strata on each side is the "anticlinal axis."

Ques.—With a fan developing 30 hp. and a water gage of 2.3 in., if only 50 per cent. of useful effect is obtained, what quantity of air would be produced?

Ans.—The useful effect being 50 per cent., the power on the air is $0.50 (30 \times 33,000) = 495,000$ ft.-lb. A water gage of 2.3 in. corresponds to a ventilating pressure of $2.3 \times 5.2 = 11.96$ lb. per sq.ft. The quantity of air in circulation is then calculated as follows:

$$q = \frac{v}{p} = \frac{495,000}{11.96} = 41,388 \text{ cu.ft., nearly}$$

Ques.—The anemometer indicates a velocity of the air current, of 200 ft. per min., in an airway 5x8 ft. and 4000 ft. long. Calculate (a) the quantity of air passing per minute; (b) the pressure in pounds per square foot; (c) the water gage; and (d) the horsepower on the air.

Ans.—(a) The sectional area of the airway is $a = 5 \times 8 = 40$ sq.ft. Assuming the indicated velocity is an average velocity for this airway, the quantity of air in circulation is

$$q = av = 40 \times 200 = 8000 \text{ cu.ft. per min.}$$

(b) The rubbing surface of the airway, assuming that the given length includes the return, is $s = 2 (5 + 8) \times 4000 = 104,000$ sq.ft. The ventilating pressure is, then,

$$p = \frac{qs v^2}{a} = \frac{0.00000002 \times 104,000 \times 200^2}{40} \\ \approx 2.08 \text{ lb. per sq.ft.}$$

(c) The water gage is $2.08 \times 5.2 = 10.8+$ in.

(d) The horsepower on the air is

$$H = \frac{qp}{33,000} = \frac{8000 \times 2.08}{33,000} = 0.504 \text{ hp.}$$

Ques.—Show by figures how to calculate the quantity of air passing in an entry 6 ft. high and 10 ft. wide, the velocity of the air current being 600 ft. per min.

Ans.—The sectional area of this airway is $a = 6 \times 10 = 60$ sq.ft. The quantity of air passing is, then,

$$q = av = 60 \times 600 = 36,000 \text{ cu.ft. per min.}$$

Ques.—If 10 hp. gives 20,000 cu.ft. of air per minute, in a certain mine, what horsepower will be required to produce 45,000 cu.ft. in the same mine?

Ans.—Assuming there is no change in the efficiency of the ventilator, the power varies as the cube of the quantity, or the power ratio is equal to the cube of the quantity ratio. Thus, calling the required horsepower x ,

$$\frac{x}{10} = \left(\frac{45,000}{20,000}\right)^3 = \left(\frac{9}{4}\right)^3 = \frac{729}{64} \\ x = \frac{10 \times 729}{64} = 113.9 \text{ hp.}$$

COAL AND COKE NEWS

Washington, D. C.

An interesting decision has been announced by the Interstate Commerce Commission regarding the case of the "Lebanon Commercial Club vs. the Louisville & Nashville R.R. Co. et al," which related to the local rates for the transportation of bituminous coal in carload lots from mines located on the Louisville & Nashville R.R. in Virginia and Tennessee, these being less to Louisville than to Lebanon, an intermediate local point 67 miles nearer to the mines than Louisville. Complaint was also made because the rates varied according to the grade of the coal while the rates to Lebanon were not varied in this way.

The commission now holds that as the rates to Louisville are influenced largely by the movement of bituminous coal over the Ohio River and by competing rail carriers the lower and varied rates to that point have not been shown to be unjustly discriminatory as against Lebanon.

In dealing with this case some interesting points were developed, notably the general question with reference to the proper method of treating points which enjoy water connections and which are more or less competitive with other points that do not enjoy such connections. In speaking of this matter, the Commission, in the decision referred to, says:

The complainant admits that Louisville's position on the Ohio River, and as a railroad center, operates to give it rates which Lebanon may not reasonably claim. But it is insisted that these advantages do not warrant the existing differences between Louisville and Lebanon rates, and that the same should not exceed 15c. per ton. This particular figure, however, is merely the conclusion of the complainant's rate expert. The Commission finds the record quite bare of anything that will enable it to determine the extent to which the Lebanon rate should be allowed to exceed the Louisville rate. It must also be remembered that any change which may be made in the existing differential will necessarily reflect into the rates to other Louisville & Nashville points, intermediate, as is Lebanon, to Louisville. Under all these circumstances, it is the view of the Commission that final action on the fourth section element of this petition should await the disposition of the Louisville & Nashville R.R. Co.'s Fourth Section Application No. 1952, and also the construction of the fourth section to be made by the Supreme Court in cases now under submission.

The only question remaining is whether or not there is discrimination against Lebanon, because its rates are not varied according to the grade of the coal, as are the rates to Louisville. Complainant contends that a number of years ago Lebanon enjoyed such rates through the medium of a tariff provision which granted a 30 per cent. refund from the published rate when the coal was used for steam purposes.

The defendants say that when this refund was made the gross rate from Jellico to Lebanon was \$1.65 per ton. This amount was actually collected and retained on domestic coal. The refund left the net rate on steam coal \$1.15 $\frac{1}{2}$ per ton. This refund was discontinued July 20, 1901, and the Louisville & Nashville then established the present rate of \$1.20 per ton on all bituminous coal from Jellico to Lebanon. It will be observed that this effected a reduction of 45c. per ton on domestic coal and an advance of 4 $\frac{1}{2}$ c. per ton on steam coal.

The Louisville market appears to be controlled by the movement of coal by river at a low transportation cost, and by the movement of coal from western Kentucky mines at a rate of 60c. per ton by the Illinois Central R.R. These conditions appear to compel the Louisville & Nashville to make a low rate to Louisville on slack coal and on nut and slack mixed, but permit a somewhat higher rate on other grades.

An examination of the tariffs of the Louisville & Nashville R.R. Co. discloses that Lebanon, in this respect, is in no different position from the other local Louisville & Nashville points. Also the present rates to Lebanon appear to be so constructed as to equalize the former refund on steam coal. On this record the Commission cannot say that the present graded rates to Louisville result in unjust discrimination against Lebanon.

HARRISBURG, PENN.

The three-day Industrial, Welfare and Efficiency conference at the State Capitol came to an end on Oct. 29, with an "experience meeting," at which mayors, labor leaders and officials of industrial and labor commissions of this and other states gave the results of their observations and generally agreed that there should be concerted effort by employers and employees to work for abolition of dangerous practices.

The chief address was made by Dr. Lucien W. Chaney, of the United States Department of Labor, who in the course of his remarks, stated that the reputation of American industries for accidents was not good, yet statistics of late years showed that the majority of places were superior to European industries in the matter of casualties.

The conference adopted resolutions recommending that the department of labor and industry which had called the conference in conjunction with the Engineers' Society of Pennsylvania should encourage in every way the organization of safety commissions in works and that its efforts to secure mediation of disputes should be supported.

Naturally the bulk of the discussion and papers went toward the lines where statistics and experience show the casualties are greatest, the industries and the facts and figures presented during the three days of the convention should prove immensely valuable to students of welfare, etc., because they came from every angle of the problem. One of the most significant facts about the addresses was that while the speakers were regarded in most cases as advanced in the benevolent projects of the day, every one counseled study of the proposition and earnestly represented the danger of laws that are not workable or which in the language of the legislative body are "half baked." The only regret about the convention is that it could not have been held before the last legislature convened and the men elected there to have been required to attend its sessions and gain a little knowledge on what they were going to legislate on.

Individuals File Their Answers

George F. Baer, Edward T. Stotesbury, Henry C. Frick, Peter A. B. Widener, George F. Baker, Henry A. du Pont, Daniel Willard, Henry P. McKeen and Samuel Dickson, individual defendants in the government's suit to dissolve the so-called hard-coal trust, on Oct. 29, filed an answer in the United States District Court, denying the charges of conspiracy to monopolize the sale and production of anthracite in Pennsylvania.

Aside from the general denial of having formed a monopoly in violation of the Sherman anti-trust act and the commodities clause of the Hepburn act, the defendants refer to the answers of the defendant coal companies as filed last week through Charles Heebner. The answer, in effect, merely conforms with the rules of the court, the defense being outlined in the answers of the Reading Co. and the railroads.

Mine Cave Investigation

Charles Enzian, Mining Engineer of the U. S. Bureau of Mines, has been instructed by the Bureau to coöperate with D. T. Williams, former mine inspector, and H. D. Johnson, the two men selected by the city council of Scranton to check up the work of the city mine cave commission, with reference to the cave situation in West Scranton. The attorneys for the city have started two suits in regard to this matter, one of which will probably be settled in February, this being the suit of the Graff Furnace Co. vs. the Scranton Coal Co. The proposition involves three factors—surface, minerals, and surface support. The Supreme Court has held that surface support is the inherent right of the surface, as broad as the grant, and the grantor, who owns in fee both coal and surface, cannot reserve the right of surface support. It is this decision upon which the citizens of West Scranton are relying. One feature which causes considerable trouble is the fact that decisions have been handed down in the lower courts whereby it was held that operators are entitled to all pillars where the lease or deed calls for all the coal. In the cases where royalty is being paid, the lessors insist on their royalties under the ruling of the court entitling the operator to all the coal, and this is in the main responsible for the complete removal of pillars, and makes the situation difficult for the operators who would consider leaving sufficient pillars for surface support.

PENNSYLVANIA

Anthracite

Pottsville—The Philadelphia & Reading Coal & Iron Co. is preparing to tap the rich deposits of coal in the lower levels of the old Anchor Colliery, Heckscherville Valley, near Pottsville. Forty years ago the workings caught fire and the only way to prevent the complete destruction of the operation was to flood it. The water has just been pumped out. These are practically all virgin coal measures and it is thought that millions of tons can be mined. The coal will be prepared at the Pine Knot breaker, at Coal Castle.

Lykens—The Miners' Institute recently formed held its first banquet on Saturday evening. A wagon load of turkeys, forty in number, was prepared for the miners, and the Reading Railroad Co. ran a special train carrying 360 men. The Miners' Institute at this place was organized for the purpose of education as well as developing the town in any way necessary. One of the first questions to be considered is the New School Code passed by the recent legislature.

Wilkes-Barre—The first case wherein parents living in a foreign country, have sued a coal company in this country for the death of their son, was started on Oct. 29, when a suit in trespass was brought against the Delaware & Hudson Co., in behalf of Fredio Hudak and Pajza, his wife, who are residents of Austria. They ask \$10,000 for the death of their son, who was killed in one of the company's mines.

The suit is being brought through the Austrian Consular agency and is the first of its kind to be filed in this section of the state. By an act of the legislature of 1911, parents and others living in foreign countries can institute suit for damages for injuries sustained by relatives whose heirs they would be in case of death. Previous to this relatives had to be residents of the state to enter such a suit. The victim was employed by the D. & H. Co., for about four months and was caught by a runaway trip on a slope.

Seranton—Five miners while employed at timbering in the Taylor mine of the D. L. & W. R.R. Co., were seriously burned by an explosion of gas recently. The men were carrying naked lamps and in going from one part of the mine to another they suddenly walked into a body of gas in the Big vein and the explosion followed. They were knocked down by the concussion and were burned about the face, hands and upper part of the body.

On Oct. 29 several miners employed in the Diamond mine of the Lackawanna Coal Co. had a narrow escape when men, blasting for a sewer, fired a heavy charge, knocking a hole 5 ft. long and almost as wide into the mine workings. The men were mining coal only a few feet away, but none were injured.

Shamokin—On account of a holy day on Nov. 1, many of the collieries were closed. Ministers interested in an evangelistic campaign to be waged next winter appealed to the miners to help them clear a plot of ground on which to erect a tabernacle. A large number responded to the call and by night had things in shape for carpenters to begin work. The building will seat 3000 persons. Even most of the carpenter work will be done by the miners free of charge.

Glen Lyon—A committee representing 4000 men and boys employed at the Susquehanna Coal Co.'s collieries have waited on Supt. Kohlbreaker to ask assistance in having non-union men employed at the collieries join the miner's union. The committee had to be referred to the general manager's office at Wilkes-Barre and will probably receive a hearing in a few days before another "button strike" is called in the lower valley workings.

BITUMINOUS

Beaverdale—The Logan Coal Co. is installing extensive improvements at the workings, including a slope and motor system of haulage, in place of the present rope and shaft haulage. The improvements will greatly increase the daily output. The Pennsylvania Coal and Coke Corporation mine at this place is also to be converted into a drift mine.

Johnstown—It is likely that an appeal will be taken by counsel for E. H. Werner et al. in the case against the Western Maryland R.R. Co. in which damages to the sum of \$110,000 were asked because of the building of a new spur of the railroad through properties of the defendants. Judge Reed of Jefferson County heard the award. There were four sets of plaintiffs, the Central Savage Firebrick Co., lessees of the coal and clay mining rights, Emanuel Statler who owned one-third interest in the coal, E. H. Werner, who owned one-third of the coal and Samuel U. Shober and George F. Kimball, who owned the remaining interest in the coal.

Blossburg—The Carnegie Hero Fund Commission at its fall meeting in Pittsburgh on Oct. 31, awarded the widow of James Jack, Jr., who died saving Michael Gallant and Martin Gula, miners, from a runaway train in a coal mine at St. Benedict, Penn., a silver medal and a pension of \$50 per month, with \$5 a month additional for her daughter until the child reaches the age of 16.

Washington—Norvelia V. Sower has filed his statement of claim against the Monongahela River Consolidated Coal & Coke Co., in which he asks \$5000 damages for personal injuries received while employed on a motor in the mines of the company in July. The company is charged with negligence in not providing a safe place to work and in permitting a motor to remain out of repair. It is averred that the plates

on a certain motor, which protect the gear wheels, became worn out and dropped off, leaving the teeth exposed, into these the plaintiff got his hands, receiving painful injuries.

Cairnbrook—The Berwind-White Coal Mining Co., which has a large tract of valuable coal land, is not ready to begin operation of the new field at this time. Preparations will be made this winter, however, to open the tract as soon as spring weather arrives. The Lochrie and Loyalhanna mines are ready to ship coal as soon as the branch line from Windber is completed by the Pennsylvania Railroad.

WEST VIRGINIA

Eskdale—Three hundred miners employed by the National Bituminous Coal & Coke Co., in Eskdale on Cabin Creek, recently struck because of a dispute over the price of pick mining.

Charleston—The coal-property assessment appeals heard recently by Circuit Judge Samuel D. Littlepage have been decided by him in favor of the coal company. State Tax Commissioner Fred O. Blue may appeal to the Supreme Court.

Gary—The Government Bureau of Mines' rescue car No. 7, in charge of Jesse Henson, after spending two weeks on Pond Creek, is now at Gary. This car is on the road for the purpose of giving men instructions and training in the use of oxygen breathing apparatus and first-aid work. It will remain at the operations of the United States Coal & Coke Co. until Nov. 8, after which time it will go to Jenkinjones, Switchback and Pocahontas.

ALABAMA

Tuscaloosa—The barge line connecting the coal fields of the Birmingham district with the Gulf, through the Warrior River, was opened last week. This barge line will give the coal fields of Alabama direct water connection with the Gulf, and opens up a rich field of coal deposits, Tuscaloosa, Ala., being the chief city from which shipments will be made.

Birmingham—Alabama had a decrease of nine mine fatalities for the first seven months of 1913, against the corresponding period of last year. The record of the United States as a whole is not so encouraging, as the 1913 list shows an increase of 18 over the same period of last year. In the Alabama mines during the first seven months of 1912, 64 men met death by fatal accidents. During the first seven months of 1913, 55 miners have been killed. For the entire country, there have been 1437 miners killed during this period, while in the same length of time last year 1419 miners were fatally injured in the mines.

KENTUCKY

Earlington—The Illinois Central R.R. has renewed its contracts for coal with the operators along its lines in western Kentucky. The contract runs for one year, the old contract expiring this month. The agreement was changed slightly, and there was a discussion of the amendment, the document finally being made on a mutually satisfactory basis.

Pineville—The Wallins' Creek Coal Co. has completed a new tipple, replacing that which was destroyed by fire several months ago, and is again delivering graded coal. It was compelled to market only run of mine during the time it was without screening facilities. The company has recently acquired additional property, and will enlarge its capacity.

Rockport—A few of the small coal mines, are having trouble with their miners, and at one mine the men have walked out. The walk-out resulted from the discharge of several men who quit work on the day of a rally at Madisonville intended for the purpose of organizing the miners of western Kentucky.

Morganfield—E. K. Ashby, who operated what is known as the Thomas coal mine, has disposed of the property to the Jackson Coal Co., Ft. Branch, Ind. The new owner will operate the mine, which has been idle for some time.

OHIO

Columbus—The Lorain Coal & Dock Co. has appealed to Judge Vickery to set aside a \$111,000 verdict awarded by a jury in Judge Lawrence's court against them and in favor of Anton Pietrowski, of Lorain. The corporation declares that it is not responsible because Pietrowski was injured when the corporation was a West Virginia company. It is now an Ohio corporation.

The Ohio Mining Commission, which has finished visiting mines in Ohio and adjoining states, had only a few sessions during the past week when Professor Ray of the department of Mines of the Ohio State University and Professor Bownocker, of the department of geology of the state institution, appeared before it. Arguments from the miners

and operators will be heard beginning Nov. 5, according to the present arrangements.

As the aftermath of a fire which is said to have done thousands of dollars damage, caused it is alleged, by oil being allowed to escape in coal, the Rock Run Coal Co. has filed suit for \$50,000 damages against the Chartiers Oil Co. The coal company is the owner of what is termed the No. 6 vein in Coal Township, Perry County, Ohio, and declares that although the oil company knew it was the owner of the 20-acre tract and was mining therein, it drilled a well for some distance below the coal.

Dayton—The announcement is made that the W. P. Rice Coal Mining Co. recently incorporated with an authorized capital of \$75,000 will develop coal lands in Athens county, Ohio. The company's headquarters will be located at Dayton.

INDIANA

Indianapolis, Ind.—The Monon Coal Co. and the Consolidated Coal Co., operating mines in the Sullivan-Linton group, embracing the counties of Sullivan, Green, Owen and a part of Clay, have petitioned the Interstate Commerce Commission for a regrouping of the mines in Indiana with reference to rating to the Chicago district. Mines in the Brazil-Clinton group, comprising the counties of Vermilion, Vigo, Park, and a part of Clay have a rate of 77c. to Chicago, and the mines in the other group 87c. Being competitive, it is claimed the mines in the two districts should have the same rating.

Petersburg—The Knox Mining Co., of Bicknell, and Martin & Miley, of Montgomery, have leased more than 2000 acres of coal land near here.

Princeton—The fire in the Ft. Branch mine of the Ft. Branch Mining Co., which it was thought had been extinguished last week after three days' burning, has broken out again and is more threatening than at first. The mine-rescue car was summoned from Evansville.

ILLINOIS

Benton—The cages at the shaft of the Benton Coal Co. dropped to the bottom of the shaft a few days ago, putting the mine out of commission for several days. No one was seriously injured.

East St. Louis—At several points in Southern Illinois there are many petty strikes on account of local grievances. This is a forerunner of what is to be expected Apr. 1, next, when the present agreement expires.

Decatur—A miner, John Magill, in the Lovington Mines, dug out a few days ago a petrified human foot. It was imbedded in rock almost a thousand feet below the surface. It has been sent to experts for examination.

Zeigler—Some little time ago a slight explosion took place in the mine at this place; there were about 450 men in the mine when the explosion occurred, but only one was burned by the explosion and no one was fatally injured.

Livingston—The No. 1 mine of the New Staunton Coal Co., located at this place, made the following averages for the first half of the month of September: The average output per day of eight hours was 4277 tons and for the last half of the same month the average daily hoist was 4318 tons, the later figure means about 539 tons per hour, or nearly 9 tons per minute. This is a machine mine, operating in the No. 6 seam and is 286 ft. deep.

Springfield—The State Mining Board will hold an examination for state mining inspectors, beginning Monday, Nov. 17, in the office of the Board, Springfield, Ill. This Board has been reorganized recently, the following members having been appointed: John Bohlander, president, Pekin, operator; James Forester, Hallidayboro, operator; James Shaw, secretary, Virden, miner; Thomas L. Jones, Ladd, miner; J. B. Mc-Kiernan, Peoria, hoisting engineer.

The mines of the O'Gara Coal Co., located in the counties of Sangamon, Macoupin and Saline, have resumed operation after an idleness of several weeks owing to financial troubles.

ARKANSAS

Fort Smith—The recent coal-mine strikes, affecting nearly 700 miners in Oklahoma and Arkansas, were amicably settled Oct. 29. Five hundred men returned to the Oklahoma Co.'s mines, at Dewar, Okla., and 175 men to the Eureka Coal Co.'s mine at Montana, Ark.

NEW MEXICO

Dawson—Work was resumed Oct. 30 in Mines Nos. 1, 4 and 5 of the Stag Cañon Fuel Co., with about one-third of the normal force. Forty-two bodies still remained in mine No. 2. The wrecked workings have been explored and the remaining bodies will be brought out as soon as possible. Upon this date 219 dead had, in all, been taken from this mine.

OREGON

Portland—Anthony Mohr who is interested in the development of a coal proposition south of Fossil, Ore., has extensive reports to present to the officials of the Oregon-Washington R.R. & Navigation Co., with a view of having the road extend its line to the fields. Mr. Mohr reports having put in the months of June and July in the coal district, where his syndicate holds leases on 2000 acres of land. He says an 8-ft. seam of semi-bituminous coal equal to the Rock Springs variety has been located. He also says further work will be prosecuted in February.

FOREIGN NEWS

Juneau, Alaska—A despatch from Juneau states that the registrar and receiver of the Juneau land office have recommended to the commissioner of the general land office that the Hartline group of coal claims in the Bering River district, Alaska, located by various members of the Hartline family of Anna, Illinois, be canceled for failure to open and develop the claims. The local land office found that the charges of fraud alleged to have been committed by John W. Hartline and others in locating the claims were not proved.

Lingan, Nova Scotia—Owing to the increasing demand for Cape Breton coal, which cannot be supplied by the companies now operating, it is proposed to develop on a large scale the coal areas owned by the Lingan Coal Co., Ltd., in the vicinity of the old Gardiner mine at Lingan. This property is stated to contain 40,000,000 tons of good workable coal. The movement is being promoted by A. C. Ross, who has been for many years prominent in connection with the mining and industrial development of Cape Breton. Mr. Ross will make Montreal his headquarters and will endeavor to interest Canadian and American capitalists in the enterprise.

Udi, Nigeria—It has been announced that extensive coal deposits have been discovered at Udi, Southern Nigeria, West Africa. Tests carried out by the Government and analyses at the Imperial Institute in London are said to have given results, at least two-thirds as good as those of the best Welsh coal. It is also stated that a survey for a railway to connect this coalfield with the river port of Onitsha is being carried out. The importance of this line as affording cheap fuel to the two Nigersias would be great, while it would make for the development of the trade of this rich district and the settlement of internal disputes among the natives of the hinterland.

Vancouver Island, British Columbia—Progress toward resumption of production of coal at normal rate is slow, except in the case of the mines of Comox colliery (Cumberland) of the Canadian Collieries (Dunsmuir) Ltd. For the month of September the output of the Cumberland mines was 52,187 tons, nearly one-third of which was from No. 5 mine.

The riots of the strikers that took place in August did not cause a stoppage of work at Cumberland. At the same company's Extension mines, though, operations had to be suspended, following destruction of three electric locomotives, a number of mine cars, and part of the surface buildings, to which the strikers set fire.

The Vancouver-Nanaimo Coal Mining Co.'s Jingle Pot mine is the only one on Vancouver Island being worked with U. M. W. of A. men; its production is probably about 200 tons a day, but definite information has not been obtained. The Pacific Coast Coal Mines, Ltd., is working its South Wellington mine, but as miners are not yet obtainable in sufficient numbers to admit of a larger production, output is only about 200 tons a day. This company is proceeding with the equipment of two new mines in the northern part of Vancouver Island. The Western Fuel Co., which has large mines near Nanaimo, is not yet making any regular production worth noting, though it is stated it is getting out a little coal.

PERSONALS

J. Warber Shook, vice-president and general manager of the Central Iron & Steel Co., at Holt, Ala., has tendered his resignation, and will enter other business. Mr. Shook is one of the best known coal and iron men in the South.

Erskine Ramsey has been appointed as the Birmingham member of the American Executive Committee of the Anglo-American Exposition to be held in London next year.

W. L. Klutz, formerly superintendent of the Thomas furnace of the Republic Iron & Steel Co., at Thomas, Ala., has been appointed general manager of the Central Iron & Coal Co., at Holt, Ala.

W. A. McDonald has been appointed manager by the Vancouver, B. C., men who recently acquired the coal property of the Columbia Coal and Coke Co. formerly controlled in Winnipeg, Manitoba.

John Mitchell, former president of the United Mine Workers of America, was honored by thousands of miners throughout the various coal fields of Pennsylvania, on Oct. 29. Little or nothing was done at the collieries. Parades, mass meetings and many large demonstrative celebrations were held at Wilkes-Barre, Pottsville, Scranton, Shamokin and Hazelton.

E. N. Saunders recently elected president of the Northwestern Fuel Co., is one of the youngest men in St. Paul at the head of a large corporation. The Northwestern Fuel Co., with a capital of \$4,500,000, has extensive interests in this section, while the docks at Duluth are among the most modern in the country. Mr. Saunders is 36 years of age and a graduate of Yale.

Jas. McEvoy, of Toronto, Ontario, who was associate leader of one of the International Geological Congress excursion parties that went west after the close of the congress, has recovered from the attack of pneumonia that necessitated his going into hospital in Vancouver, B. C. Before returning to Toronto, he examined the property of the Columbia Coal and Coke Co., situated in Similkameen district, B. C.

CONSTRUCTION NEWS

Pomeroy, Ohio—The K. & M. Railway Co. has started to build a two-mile branch up Thomas Fork to tap a new coal territory which is being opened by the Stalter-Essex Coal Co. It is expected to have the mines opened by the first of the year.

Butler, Penn.—Work has been commenced on the plant of the Lake Trade Coal Co., located a short distance from Argentine. This company has more than a thousand acres of coal land under contract in this district, and the intention is to mine 1000 tons of coal per day when in full operation.

Venice, Penn.—Work on the new Montour branch of the P. & L. E. railroad is progressing rapidly, and should be ready for the ties and track in a few weeks. Work on the new mines No. 1 and 2, is being pushed and it is expected that the mines will be producing by the time the railroad is completed.

Crow's Nest Pass, B. C.—The building of a new locker house has been undertaken at the Crow's Nest Pass Coal Co.'s Coal Creek mines, present locker accommodation being inadequate. Production of coal from the B North mine, Coal Creek, has been considerable lately; the new jig is now in operation there.

NEW INCORPORATIONS

Columbus, Ohio—The Kingwood Collieries Co., of Columbus, Ohio, has been incorporated with a capital stock of \$100,000 to mine and deal in coal. The incorporators are J. W. Miller, J. S. McVey, D. N. Postlewaite, L. M. McGrath and M. A. Fanning.

Glen Campbell, Penn.—A charter was granted the Superior Coal Co. to mine coal; capital \$5000. The incorporators are George S. Hampton, Harry T. Rotenbury, and H. J. Ehrelich all of Philadelphia.

Harrisburg, Penn.—The following companies have filed notice of an increase of debt with the Secretary of State. The Susquehanna Coal Co. from nothing to \$10,000,000 for the ultimate purpose of absorbing the coal properties of the Pennsylvania R.R. Co.; the Wilkes-Barre Colliery Co., of Wilkes-Barre from \$310,000 to \$500,000; Dexar Coal Co., of Philadelphia from \$5000 to \$50,000; and the Hawthorne Coal Co., of Williamsport from nothing to \$67,000.

Philadelphia, Penn.—The Eastern Ore Co., of Philadelphia, has been incorporated under the laws of Delaware, with a capital stock of \$1,000,000. Object to acquire coal, iron and other minerals and ores.

INDUSTRIAL NEWS

Glasgow, Scotland—One hundred thousand miners in Scotland have received an increase of wages amounting to 6c. per day.

Lansford, Penn.—The boiler makers and apprentices of the Lehigh Coal & Navigation Co. have received an increase of wages, ranging from 2c. to 5c. per hour. This increase is to last for one year.

Birmingham, Ala.—The Philadelphia furnace of the Sloss Sheffield Steel & Iron Co., at Florence, Alabama, which has been out of blast since last May, has been relined, and was blown in in October.

Steubenville, Ohio—The tow-boat "Robert Jenkins" on its way south with a coal float, lost five barges here. The barges crashed into a pier of the Panhandle railroad bridge and sank. The tow boat was not damaged.

Columbus, Ohio—The Ohio State Utilities Commission has granted permission to the officials of the Hocking Valley Railway Co. to issue \$4,000,000 one-year notes for the purchase of equipment providing they are not sold under 98 per cent.

Carrollton, Penn.—T. S. Davis recently purchased a tract of about 1100 acres of coal in the vicinity of Bradley Junction, representing an expenditure of close to \$50,000. The coal brought an average of \$40 per acre, and was purchased from Peter Bertram, John Hershell, and others.

Sydney, N. S.—Nearly 7,000,000 tons of coal were mined in 1912 from the four Nova Scotia coalfields; Sydney, Inverness, Pictou and Cumberland. Approximately half of this amount was sold in the Maritime Provinces, the rest going to Quebec and the United States.

Washington, Penn.—In connection with the trouble at the Reliance Coke Works, near Centerville, attorneys, on Oct. 30, filed 11 more ejectment suits against miners living in company houses who refused to work in the mine. The court honored the request of the company and directed the sheriff to eject these 11 men and their families.

Duluth, Minn.—The barge "Santigo," of the J. J. Boland line, Buffalo, with 2500 tons of anthracite, cleared for the Soo recently with the first load of coal ever shipped east from Duluth by way of the Great Lakes. The cargo consisted of screenings from anthracite shipped up lake in the summer and has been sold to a company at Sault Ste. Marie.

Philadelphia, Penn.—Hearings of the Interstate Commerce Commission on the anthracite coal rates will begin at the Bellevue-Stratford Hotel, Philadelphia, on Nov. 17, with Commissioner J. H. Marble in charge. It is reported that the anthracite carrying roads will be called upon to submit evidence. The hearings will be the first held since the recent investigation was started.

Hickory, Penn.—Charles Marquis, of Woodrow, has sold his farm containing 260 acres to Virgil McDowell of Midway. The consideration was about \$33,000. Mr. McDowell is the agent for the Carnegie Coal Co. The farm is known as the Thomas McCorkle farm. It came to Mr. Marquis through the will of Mrs. McCorkle. This farm is one of the last to be sold in this section for its coal.

Crow's Nest Pass, B. C.—The Crow's Nest Pass Coal Co. has contracted to supply coal to the City of Spokane, Washington, at the following rates: For slack, \$4.80 a ton; mine run, \$5.55; No. 1 lump, \$5.75; No. 2 lump, \$6.15. These prices include delivery at the city buildings, which means about 50 cents a ton in favor of the city. Tenders had been invited, but the Crow's Nest Co. declined to put in a bid; the bids received showed an increase on last year's prices for mine run and lump coal, notwithstanding the recent tariff reduction of 45 cents a ton.

Vancouver Island, B. C.—The Canadian Collieries (Dunsmuir) Limited has ordered electrically driven pumping plants for three of its mines—one unit each for its No. 5 mine, Comox colliery, Cumberland, and Extension colliery near Ladysmith, and two units for its newly opened No. 8 mine, situated about four and one-half miles from the town of Cumberland, Comox district. One of the last-mentioned will consist of two pumps working in series, to deliver 350 gal. per min. against a head of 740 ft. Of the others, two will be driven by 75-hp. alternating-current motors, and the third by a 75-hp. direct-current motor; each of these will be capable of delivering 350 gal. per min. against a head of 370 ft. The pumps will be manufactured by Canadian Allis-Chalmers, Ltd. and the motors by Canadian General Electric.

COAL TRADE REVIEWS

GENERAL REVIEW

Anthracite trade assuming the usual winter activity but lacking snap except in certain grades. Soft coal showing wavering tendency in spots. Lower temperatures and a tightening in car supply having a steady influence. Most grades now in good supply.

Hard coal operations are more or less closely confined to certain sizes, and the trade lacks the characteristic snap usual at this time of the year. However, the slow movement is causing a certain uneasiness, and the companies are not inclined, as a rule, to take on any new business. Indications are that there is not a great deal of coal in dealers' hands. Stove and broken are short, particularly the former, and dealers are finding it necessary to do considerable jockeying to keep supplied in all grades.

Bituminous operators have so far held the market firmly but there is an undeniable wavering tendency, due to the unusually heavy business through the summer, and the absence of any new demand. This is particularly the case in the Eastern Coastwise trade where large corporations are asking that shipments on contracts be delayed, and producers are inclined to modify prices although no shading of consequence has yet developed. Wholesalers are finding themselves unable to place the unexpectedly heavy tonnages from West Virginia, particularly as a great deal of this trade was covered by Pennsylvania coals in anticipation of a shortage in the former grades. Plentiful supply, even of the better qualities, is the feature of the situation at the moment.

A complete absorption of the abnormally heavy production of slack, incident to the large movement to the lakes is the feature of the situation in the Pittsburgh district. The car supply has been better than was anticipated, while the increased retail demand has about equalized the decreased industrial consumption. The situation in Ohio is more encouraging. Production is being steadily restricted, due to the short car supply, and demand is on the increase. The recent cold snaps resulted in a heavy rush for coal, and prices are ruling firm with a tendency toward higher levels.

Trade at Hampton Road is brisk, with a good supply of both coal and vessels; the demand is heavy, extending even into the high volatiles. The car situation has been somewhat easier, and producers are optimistic in spite of unfavorable reports in other parts of the country. In the Southern market, both coal and coke are quiet, particularly the steam grades, and there is little indication of any immediate improvement.

Low temperatures and a further restriction in the car supply has had a tightening effect upon the Middlewestern situation. The trade is on a comparatively strong basis, with prices on certain grades exceptionally high. There is a heavy movement in anticipation of a severe winter; the country districts are also coming into the markets stronger, and the outlook is good at the present.

BOSTON, MASS.

Pennsylvanias seem to find a ready sale. Uneasiness over an bordering on a weak market. Market cargoes at distributing points. Georges Creek in plentiful supply. Higher grade Pennsylvanias seem to find a ready sale. Uneasiness over anthracite supplies, particularly on stove.

Bituminous—Pocahontas and New River are apparently entering on a dull season. No intimations of any shading of the \$2.85 f.o.b. price have been heard but the market cannot be said to be very strong. The export business has slumped for the present. Coastwise there is almost no inquiry and conditions are as easy as though it were mid-summer. Even the corporations are asking that shipments on contract be postponed and there is a general anxiety on the part of the agencies to make sales.

Market cargoes, a sure index of a weak market, have appeared this week and on car prices have dropped a notch or two lower; \$2.70 has been reliably reported for Hampton Roads coal for inland delivery, a price that would net \$2.70@2.75 f.o.b. loading port.

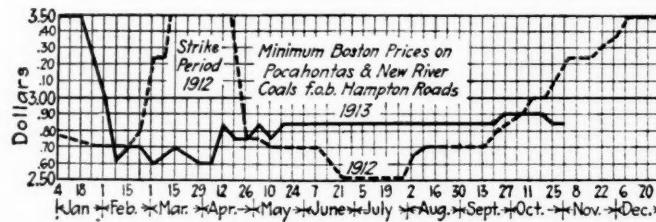
The outlook is not particularly encouraging, although much may happen at this season either to cut down output or stimulate demand. The West Virginia production has

been rather heavier since July than was anticipated and contractors at this end have not absorbed fuel to quite the extent that was looked for. During the suspension, too, when there was uncertainty over necessary supplies, considerable tonnages of the Pennsylvania grades were picked up by the large consumers. Everything considered it is not surprising the market is druggy now.

Georges Creek is also in strong supply and with not the spot business in sight that is necessary to keep car equipment working. It looks now as if this popular grade were over the hump and that for the balance of the season there would be supply enough to meet contract demands.

More is being heard of car shortage in different districts in Pennsylvania. The market on the better grades continues fairly firm with moderate inquiry. Some of the operators have modified prices 5@10c. in order to take business for which cars are likely to be in better supply and also to tide them over what they consider only a temporary dullness.

There has been a slight stiffening in water freights since



the bad weather in October, particularly on the smaller craft out of New York; 75c. is about the rate from Hampton Roads to Boston for sail and barge tonnage. There is a call now for outside transportation to bring anthracite that is furnished by individual operators and rates are understood to be around 65c. to Boston.

Anthracite—All the companies are slow on deliveries and have instructions out to be wary of new business. Dealers are doing everything possible to get stove coal in something like the proportion demanded by their trade but that size as well as broken is coming forward extremely slow. Premiums f.o.b. New York for stove are reported to be 25@35c. and straight cargoes are out of the question. The continued slow movement of tugs and the colder weather are making some of the Eastern dealers uneasy on account of the short time left for receiving cargoes up the rivers.

Quotations on bituminous at wholesale are about as follows:

	Clearfields	Cambrias	Georges	Pocahontas
Mines*	\$1.05@1.60	\$1.30@1.70	\$1.67@1.77	New River
Philadelphia*	2.30@2.85	2.55@2.95	2.92@3.02	
New York*	2.60@3.15	2.85@3.25	3.22@3.32	
Baltimore*			2.85@2.95	
Hampton Roads*				\$2.85@2.90
Providence†				3.70@3.80
Boston†				3.70@3.88

*F.o.b. †On ears.

NEW YORK

Recent holidays have restricted both anthracite and bituminous production and steadied up local markets. Production up to full limit but demand not so urgent. Colder weather having a stimulating effect.

Bituminous—There is no material change in the soft-coal market, although the tendency, if anything, is easier. The holidays last week, together with Election Day this week, have resulted in a short output which has had a steady effect upon the situation. Mines as a rule continue working up to full capacity.

On the other hand, the car supply seems to be holding better than was anticipated, and there has been a heavy movement of soft coal; cars on the Pennsylvania and B. & O. railroads are reported at 60@75% of requirements. Supplies at tidewater have increased some during the week. The market is now waiting the advent of the consuming interests into the trade. So far as the prompt demand goes, it has been principally confined to the jobbing interests, and a further expansion does not seem probable until the real consumers appear.

The market in the wholesale trade is not quotably changed from last week, which prices we continue as follows: West Virginia steam, \$2.65@2.75; fair grades of Pennsylvania, \$2.75@2.85; good grades of Pennsylvania, \$2.85@2.95; best Miller Pennsylvania, \$3.15@3.25; George's Creek, \$3.20@3.30.

Anthractite—The hard-coal situation has failed to show any material change as yet, due to the colder weather; apparently this has been of a too intermittent character to have any effect. However, this has started coal moving out of the dealers' hands, and it will not be long before the effects are felt in wholesale circles. Stove coal continues to be the leader among the short sizes, although it is a trifle easier this week. Egg is rather heavy and difficult to move. The steam sizes continue about the same, the low grades being in long supply.

Production in the mining regions was badly restricted by two holidays last week and by Election Day this week, although a number of the mines attempted to work on this latter holiday. Aside from these interruptions, the companies are working full time. The car supply is still inadequate; this has not as yet seriously affected the production, but, in view of the early development of this trouble, operators are apprehensive over what conditions will be when the general car situation reaches serious proportions.

We continue New York hard-coal prices unchanged, with the exception of stove, which is now quotable at the regular circular as follows:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken.....	\$5.00		\$4.95	
Egg.....	5.25	\$5.15@5.25	5.20	\$5.00@5.20
Stove.....	5.25	5.25	5.20	5.20
Chestnut.....	5.50	5.40@5.50	5.45	5.35@5.45
Pea.....	3.50	3.40@3.50	3.45	3.35@3.45
Buckwheat.....	2.75	2.60@2.75	2.45@2.70	2.00@2.70
Rice.....	2.25	2.25	1.95@2.20	1.75@2.20
Barley.....	1.75	1.75	1.70	1.50@1.70

PITTADELPHIA, PENN.

Market lacks the general urgency, customary at this period of the year. Active business restricted to certain grades. The new Pennsylvania state tax again becoming a feature in the situation.

The anthracite trade in this vicinity, still seems to lack the snap that should characterize it at this season of the year. Outside of broken and stove coal, there does not seem to be a particularly urgent market. Of course, dealers that place orders expect them filled promptly, an indication that points to the fact that there is not a great deal of coal on hand in the dealers' yards, but the operations of the retailers, as well as the wholesale market, seems to be concentrated on certain sizes. The movement of egg and chestnut is enhanced by the decree of the operators that orders for the scarce sizes shall be accompanied with a certain proportion of the other sizes, but this argument cannot be passed along to the consumer; it requires considerable jockeying on the part of the dealers to so adjust their stocks that they will get a proportion of the sizes they are in urgent need of.

It is understood that, with the beginning of the winter season, the addition of the Pennsylvania State tax is being more generally observed than has been the case heretofore. Those operators or companies who have absorbed this tax during the hot spell, established no precedent, they say, and now that business is moving along with practically no concessions of any kind, the dealers are being saddled with this additional expense. In the city proper, this tax still continues to be absorbed, but in the suburbs, many of the dealers are including it in their price to the consumer.

The market for pea is increasing daily, with the supply only governed by the ability to load. There is as yet no indication of shortage in this size, it being understood that the large companies are fairly well stocked. The other steam sizes are also looking up, and as the winter advances, will show considerable improvement.

PITTSBURGH, PENN.

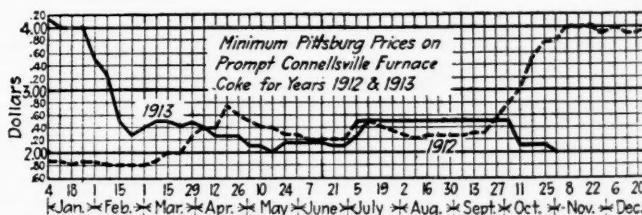
Heavy demand for slack the feature of the local market. Increased domestic consumption equalizing the lessened industrial demand. Full competition in Connellsburg coke and market demoralized.

Bituminous—Lake shipments continue heavy, and will be kept up, weather permitting, until the last moment, the vessel insurance coming off Dec. 1. Despite the heavy shipments there is practically no accumulation of slack, and it is commanding \$1@1.10 right along. A large interest which normally accumulates considerable slack to dispose of in the winter has relatively little so far, while another large interest which intended to begin piling up slack July 1 has piled none as yet, and may be inconvenienced in meeting its contract requirements this winter. There would be a ready

sale to operators at the circular price of 90c., to apply on contracts, but none is available at this figure.

Demand for 1½-in. from retailers is heavy now, apparently equalizing the slight decrease there has been from manufacturers, owing chiefly to the slowing down in iron- and steel-trade activity. While car supply is not good, it is better than was expected for this period, and coal production is nearly at capacity. Some operators would make contracts for a full twelvemonth at the regular circular prices of the season, based on \$1.30 for mine-run, but others would not, while earlier deliveries command higher prices, which may be quoted approximately as follows: Slack, \$1@1.10; mine-run, \$1.40@1.50; ¾-in., \$1.50@1.60; 1¼-in., \$1.65@1.75 per ton at mine, Pittsburgh district.

Connellsville Coke—The coke market has been in mixed condition since the break reported last week from the \$2.50 quotation of a group of operators. For several weeks previous the condition had been as follows: The Producers' Coke Co., the accredited sales representative of operators having about 5000 ovens, was quoting a uniform price of \$2.50 on furnace coke, irrespective of delivery, while a second group of operators having about the same number of ovens sold their coke independently but quoted \$2.50 as minimum, and a third group of about 5000 ovens were selling at various prices as occasions seemed to suggest. The market was made exclusively by these last, and was \$2@2.15 for furnace coke. Some three weeks ago some of the second group of operators quietly quoted cut prices, down to \$2.25 or lower; about ten days ago a sale was made, according to authenticated accounts, by the Producers' Coke Co. of 10,000 tons November to an Eastern steel company, at \$1.90, as reported a week ago. At the same time it was admitted that the \$2.50 price had been abandoned.



The expectation of the \$2.50 operators had been that when contracts expired quite generally Dec. 31 there would be such a redistribution of business as would give them a fair operation, their output recently being less than 50% of capacity, but with decreased consumption of coke it appeared probable that the business would do little more than fill up the cut price operators. There is now full competition between all the operators not provided with contracts, and the market is quotable at about \$2 for prompt furnace, and possibly \$2.25 for contract furnace, though without any serious negotiation. Foundry coke is about \$2.75 for prompt or forward. The whole market is in uncertain position, reflecting not only the break among the operators, but also the continually decreasing activity in the iron and steel trade.

The "Courier" reports production in the Connellsburg and lower Connellsburg region in the week ended Oct. 25 at 385,670 tons, an increase of 6065 tons, and shipments at 389,068 tons, an increase of 5055 tons. Prospects are that the next report will show a great reduction in both production and shipments.

BALTIMORE, MD.

Market remains rather unsteady. Mine interests determinedly holding to old standards. Exports showing improvement. Anthracite much more active with colder weather.

That the coal market here is wavering seems to be undoubtedly. In view of the abnormally good conditions prevailing through the fall and summer the best posted coal men have been predicting for some time that a drop would occur. The previous week's break, in both demand and prices has continued and it is generally reported that there was practically little or no new demand. Prices have held about the same, although an exception was slack, which sold down to \$1 and \$1.05 in some cases, a drop of about 15c. from the figures of a couple of weeks ago.

Operators are working desperately to hold the market. With plenty of coal on hand and a liberal supply of cars at most of the operations, there was a general refusal to sell at less than prices that were obtained recently. Although many coal men are predicting that a flat period is yet to be passed through, the operators for the most part appear sanguine and expect an early strengthening all along the line. There seems to be a determination on their part not to sell coal at low prices.

The situation locally is rather slow, as there is not much spot demand. Considerable coal is reaching tide for shipment over the piers, but this is mostly for domestic coastwise delivery or on export, and under contract. The export trade shows distinct signs of improvement.

Along anthracite lines there is some real activity. The past week brought the snappy sort of weather that meant business. Domestic sizes were all in excellent call and jobbers have orders for quick delivery that will mean a busy November.

BUFFALO, N. Y.

Weather and transportation conditions against bituminous trade. Much activity in anthracite in the West. Car shortage as great as ever. Coke continues weak.

Bituminous—The market for sizes in bituminous is not so strong and various members of the trade differ as to prices. The producer is certain that with winter coming on and cars scarcer that it is not going to be difficult to maintain a price which was strong last July. There is not much more talk about a special weakness setting in when the lakes close, as slack is much firmer than sizes and besides the demand for lake tonnage is heavy; coal is now being shipped out from upper-lake docks to country points beyond Lake Michigan faster than it can be obtained for shipment at lower-lake ports. It will be another month before the heavy demand for coal in the lake trade is over, and in the meantime the misunderstanding about the rail-freight rate will be settled. Some shippers still believe that the 5% advance is to go in, but it is supposed at the same time that the consumer has no such idea now and has stopped buying on the strength of it.

There will also be a strong effort to put in at least two months' supplies ahead of a possible strike next April.

Actual consumption of bituminous does not seem to have fallen off. Shippers as a rule say that they can hold the price till the stocking up against the spring suspension begins. Cars are so short that it will not be possible to flood the market when the lakes close and the uncertainty as to the turn of business generally may give way to firm confidence any day. Prices hold, but not with anything like the firmness of the earlier part of the season.

Quotations continue as before, \$2.90 for Pittsburgh lump, \$2.80 for three-quarters, \$2.65 for mine-run and \$2.25 for slack, which is much stronger than sizes. High-grade Allegheny Valley coal is steady at about 25c. less than Pittsburgh.

Coke—Reports are still against any stability in coke. All prices are weak and though the trade continues to maintain a basis of \$4.85 for 72-hr. Connellsville foundry the conditions are not favorable to holding it long.

Anthracite—The difficulty with anthracite in this market and Westward is the impossibility of getting a satisfactory supply. Some shippers express a readiness to go into the open market and buy in large quantities. The local demand is moderate, on account of warm weather. There is no surplus of independent anthracite, though no premium is yet reported. Lake shipments for the week were 106,000 tons and for October, 564,160 tons. For the season to the end of October the shipment is 4,404,696 tons, as against 3,241,653 tons to the same time last season.

COLUMBUS, OHIO

Decrease in the car supply on most roads has still farther curtailed production. Prices continue at the Nov. 1 circular and are well maintained; higher quotations freely predicted. Domestic demand particularly strong.

Operators in all of the mining districts are complaining of the short car supply which has decreased operations to a greater extent. As a result the tonnage is falling off in the face of increased demand. Prices are ruling firm and all changes are toward higher levels.

The first cold snap of the season produced such a rush of domestic orders that operators and jobbers were unable to take care of the business. One of the big drawbacks is the car shortage which is gradually increasing and from which there is little hope of remedy. Most of the retailers have asked for immediate shipment as they are desirous of accumulating stocks to guard against a famine. In the Hocking Valley the output is estimated at 50% and the same is reported from the strictly domestic fields. In the Pomeroy Bend the production is about 40 per cent, while Eastern Ohio reports about the same.

There is still a good demand from the Northwest and boats are still being chartered but some delay is occasioned in loading. Up to Nov. 1 the total tonnage handled by the Hocking Valley docks at Toledo was 2,500,000 which is about the average in previous years. Lake prices are still strong in every way. Steam demand is good with signs of improve-

ment. Railroads and many factories are using quite a tonnage. Manufacturing generally is holding up and the fuel requisitions are as large as usual for this time of the year.

Quotations in the Ohio field are as follows:

	Hocking	Pittsburgh	Pomeroy	Kanawha
Domestic lump.....	\$2.00 @ 1.90		\$2.25 @ 2.15	\$2.00 @ 1.90
3/4 inch.....	1.85 @ 1.75	\$1.50 @ 1.40	2.00 @ 1.90	1.85 @ 1.75
Nut.....	1.30 @ 1.20		1.75 @ 1.65	1.40 @ 1.35
Mine-run.....	1.50 @ 1.40	1.35 @ 1.30	1.50 @ 1.40	1.50 @ 1.45
Nut, pea and slack..	0.90 @ 0.85		1.00 @ 0.90	0.85 @ 0.80
Coarse slack.....	0.80 @ 0.75	1.00 @ 0.95	0.90 @ 0.80	0.75 @ 0.70

DETROIT, MICH.

Price advance due to heavy demand and car shortage. Domestic grades quiet, except Hocking and Pomeroy, which are more active.

Bituminous—A feeling of uncertainty prevades the local trade, although there has been a general advance in quotations on steam coal, due partially to the inability of shippers to get consignments through to this point. The car shortage has apparently reached an acute stage as regards the local situation, while operators are making every effort to rush shipments forward with the utmost dispatch. Because of the particularly bad conditions prevailing in West Virginia in this respect, many of the miners there are reported to be leaving for other districts where the situation is more favorable. As a result of these conditions, prices have advanced, both Hocking and Pomeroy lump now being quoted at \$2. Three quarter Hocking is selling at \$1.65, mine-run \$1.35, and slack at 90c. Domestic grades remain practically unchanged, with the exception of Pomeroy and Hocking lump, and Pocahontas lump and egg is in a little better supply, while the demand is not so heavy as was the case a week ago.

The market is now quotable on about the following basis:

W. Va. Splint	Gas	Hock- ing	Cam- bridge	No. 8 Ohio	Poca- hontas	Jackson Hill
Domestic lump.....	\$1.75	....	....	....	\$2.75	\$2.50
Egg!.....	1.75	....	....	....	2.75	2.50
Nut.....	1.40	....	....	....	....	1.75
Steam lump.....	1.50	....	....	....	....	....
1/2-in. lump.....	1.35	\$1.35	\$1.65	1.50	1.50	....
Mine-run.....	1.25	1.25	1.35	1.25	1.25	1.60
Slack.....	0.90	1.00	0.90	0.85	0.85	....

Anthracite—The hard-coal situation has not changed materially, the demand being less at the moment, if anything. All grades appear to be in plentiful supply, including stove coal, but jobbers are asking premiums in some instances.

Coke—Connellsville, 72-hr. coke is quoted at \$3, with Semet Solvay at \$3.25, and gashouse at \$3.10, all f.o.b. ovens.

HAMPTON ROADS

Heavy demand for coal Coastwise and foreign. Large movement from all piers. Virginian Ry. breaks all previous records for heavy dumpings.

Business from Hampton Roads for the week has been brisk particularly in coastwise, foreign and bunker shipments. There has been a good supply of steamers, barges, and schooners all week which has enabled the piers to work almost continuously. The demand for coal continues good and in addition to shipments of Pocahontas and New River there has been a fair movement of the high volatile grades.

There have been some spot sales during the week, and at a price said to be around \$3 but exact prices have not been obtainable; this quotation was for New River and Pocahontas. There has been little change in prices for high volatile coals although the demand is better than it has been for some time.

During the month of October just ended a total of 971,270 tons of coal were dumped over the Hampton Roads Piers. The N. & W. Ry. led with a total of 437,787 tons over the Lamberts Point piers, the Virginian Ry. was second with 304,779 tons from Sewalls Point while the C. & O. Ry. dumped at Newport News 228,704 tons. The month of October has been a record one with the Virginian Ry., their best previous dumping having been made in September when 300,386 tons went over the Sewalls Point piers.

LOUISVILLE, KY.

Producers optimistic in spite of a general slowing down in business. Car supply better. Illinois Central places heavy contract with western Kentucky operators. River movement improving.

The continued active demand for domestic grades and the slowing down of the call for steam coal have been the features of the local market. Eastern Kentucky operators seem to feel that the outlook in this immediate section is somewhat brighter than the general situation would indicate and they will be able to market most of their steam grades without serious difficulty. The active demand for domestic

coal has kept the operators cheerful, and they feel optimistic regarding the situation in spite of the relatively slower call for steam coal. With prices on domestic grades at current figures, the operator who is able to get out a capacity production has little to worry about, even though his business on steam coal is not what it might be.

The car situation has been easier of late, some of the operators being able to work full time, as against an average loss of two days a week, which was noted from Sept. 15 to Oct. 15. The improved situation in this respect apparently reflects a slack call for equipment elsewhere. However, few are inclined to feel pessimistic especially when sufficient orders are on their books to enable the equipment to be used to good advantage. The adoption of a contract between western Kentucky operators and the Illinois Central whereby that road is to take its coal for the ensuing year from the mines on its lines has been an encouraging development of the week. The Illinois Central is one of the largest buyers of coal in the South. There has been a good movement of river coal from Pittsburgh and West Virginia of late. Seasonably cool weather has had the effect of increasing the retail trade, and business with most yards is excellent.

Prices f.o.b. mines are quoted on eastern Kentucky as follows: Block, \$2.35@2.50; block and lump, \$2.10@2.25; round, \$1.70@1.90; nut and slack, No. 1, 70@80c.; No. 2, 50@60c. Western Kentucky coal is being offered on a f.o.b. mines basis as follows: Lump, \$1.35; egg, \$1.25; run-of-mine, \$1; nut and slack, 65c., and pea and slack, 35c.

BIRMINGHAM, ALA.

Both coal and coke still quiet and showing little improvement. Smithing coal about the same as last week. Furnace and foundry coke dull. Little buying in pig iron.

This week shows little change over last week, either in lump or steam coal. The market is quiet, especially on steam grades, and unusually so for this season of the year. Smithing coal is practically the same, with probably slightly larger sales. There is nothing doing in the furnace and foundry cokes, except in small lots. Prices though are satisfactory. Little buying was done in pig iron, and the price was a shade under that of last week. A week or ten days of good cold weather will materially aid business. The car supply shows little improvement.

NEW ORLEANS

Formal opening to navigation of Warrior River. Rise in Ohio releases large shipments for New Orleans. Storage capacity doubled.

Representatives of every coal company maintaining offices locally attended the "Open Warrior" celebration last week. By the successful voyage of a self-propelled barge 200 ft. long and 32 ft. wide up the Tombigbee and Warrior Rivers at the period of lowest water, one step in the realization of the project to bring coal to New Orleans harbor has been proved. The trip was made under adverse conditions due to the fact that two of the Government locks in the Tombigbee are uncompleted. Borden Covel, general manager of the Northern Coal Co., of Boston, has organized a subsidiary company for the marketing of coal that will be handled by the new barge line. The new company is known as the Lake Borgne Coal Co.

There was much rejoicing in New Orleans last week when the stage of the Ohio River permitted the releasing of 155,000 tons of coal for this city. Stocks in the yards of the northern companies were becoming dangerously low, and there was no attempt made to conceal the satisfaction in the early rise. Provisions are being made for storing double the usual quantity of coal this winter.

CHICAGO

Demand continues strong with prices firm and high on some grades. Boom in Franklin County coal. Supply of anthracite still inadequate. Volume of business in Springfield district increasing. Car supply and low temperatures chief factors.

Chicago market conditions are on an exceptionally satisfactory basis with practically all prices firm and some at unusually high levels. Low temperatures and further tightening in the car supply have contributed chiefly to this situation.

Reports from various sources indicate that there has been heavy buying in anticipation of severe weather this winter. There has been a boom in the Franklin County coal district. Orders have been so plentiful that the price for lump, egg and No. 1 nut has been boosted in nearly all instances to \$2.25, the mines. A few companies, however, still adhere to the old price of \$2. Many operators in this field are oversold and will have a heavy run of business for some time. A larger movement of splint coal in box cars has been noted. Requirements by owners of flat buildings and others have increased the demand for smokeless coal. The minimum price on mine-run is \$1.40, while on spot sales, prices rang-

ing from \$1.50 to \$1.60 have been obtained. Lump and egg vary from \$2.25 to \$2.50.

Dealers are not obtaining sufficient anthracite to meet demands. Box cars are now being used to haul it to Chicago as a result of a shrinkage in the supply of open equipment. Quotations on the various sizes are firm with little or no discussion about premium prices. Carterville operators are retaining their \$2 level on all sizes except No. 1 nut which is commanding as high as \$2.25.

In the Springfield territory the volume of business is showing a consistent increase. Domestic lump is selling at \$1.75 and steam lump at \$1.25, the mines. Shipments of Hocking to this market have been reduced and with additional orders from country points the price list has been strengthened; price at the mines for 1 1/4-in. lump is \$1.75. The larger sizes of Indiana domestic lump are selling here at \$1.75. The market for byproduct coke is firmer and there is an increasing demand for gas coke.

Prevailing prices at Chicago are:

	Springfield	Franklin Co.	Clinton	W. Va.
Domestic lump.....	\$2.57	\$3.05@3.30	\$2.52	
Steam lump.....	2.07		2.07	
Egg.....		3.05@3.30		9±.30@4.45
Mine-run.....	1.92	2.40@2.55	1.87	3.45@3.55
Screenings.....	1.12@1.22	1.55@1.80	1.12@1.22	

Carterville prices are: Lump, egg and No. 1 washed, \$3.05; No. 2 washed, \$2.65.

Harrisburg quotations are: Domestic lump and egg, \$3.05; steam lump, \$2.65@2.30; mine-run, \$2.40@2.55; screenings, \$1.55@1.80; No. 1 nut, \$1.75@1.80; No. 2 nut, \$2.55@2.80.

Coke—Connellsville, \$5.50; Wise County, \$5.25@5.50; byproduct, egg and stove, \$4.90@5; byproduct, nut, \$4.95@5.10; gas house, \$4.65@4.75.

INDIANAPOLIS

The weather is mild and is affecting the volume of trade. This has had the effect of tempering prices in spots. The car situation has been relieved somewhat but operators are still nervous.

The weather continues rather mild, interfering materially with a large consumption of coal, especially domestic grades. While the retailers of the city have the same prices presumably, it is said that at least one large yard has been cutting 25c. under the prevailing scale, in order to accelerate the movement into cellars. It is predicted that it will be hard to maintain uniformity in prices unless some real winter weather arrives. Stocks are ample and there are plenty of orders yet to be filled. The railroads are making some headway in relieving the car shortage but operators fear it is only temporary. Some factories, not being able to get deliveries from their usual source of supply have had to go into the open market.

Eastern bituminous coals are selling at retail in this city at \$4.75, but an occasional dealer quotes \$4.25; anthracite is \$7.75@8.50, according to size. Pocahontas \$5 to \$6; Indiana lump, \$3.50; Brazil block, \$4.25. One yard advertises: "ton of good coal, delivered, \$2; guaranteed to give satisfaction." Inquiry develops that it is nut coal, taken out of screenings over 1 1/2-in. screen.

ST. LOUIS, MO.

Market conditions improving. General advance in domestic prices caused chiefly by car shortage and increasing country business. Immediate future looks optimistic.

The market has been somewhat slow until the beginning of the present week when it seemed to pick up some. There was apparently no reason for this other than business has been gradually getting better in the country districts, although it was predicted a week or ten days ago that after the first of November the demand for domestic coal would drop off.

Car shortage conditions have been unusually severe the past week, the Illinois Central and the C. & E. I. about two days, and the Iron Mountain the same. The Southern Railway and the M. & O. are the joke roads when it comes to car supply, for if their mines get one day a week they are lucky. The Wabash is also in bad shape. The B. & O. is perhaps in the best condition of all roads entering East St. Louis.

The prevailing market is:

	Carterville and Franklin Co.	Big Muddy	Mt. Olive	Standard
2-in. lump.....				\$1.15@1.25
3-in. lump.....			\$1.60	
6-in. lump.....	\$1.75 @ 2.00		1.75	1.40@1.50
Lump and egg.....	1.85 @ 2.15	Over sold		
No. 1 nut.....	1.50 @ 1.75			
Screenings.....	0.40 @ 0.50			0.10@0.20
Mine-run.....	1.10 @ 1.20			
No. 1 washed nut.....	2.00		1.40	
No. 2 washed nut.....	1.40		1.60	
No. 3 washed nut.....	1.20			
No. 4 washed nut.....	1.05			
No. 5 washed nut.....	0.30			

KANSAS CITY, MO.

Unfavorable weather and trade quiet. Strike in the Colorado fields may affect the local markets.

With the weather unfavorable, the coal situation has undergone no change of consequence during the past week. The expected 25c. advance failed to materialize, due to the fact that the cold weather was short-lived. The increase, however, will probably come within the next few weeks, being regarded as inevitable.

There has been no great change in the Colorado situation and that coal will be missed by Nebraska, Colorado, and Kansas consumers. Dealers have comparatively little Colorado coal on hand and a few cold days will see their stocks narrowed to nothing. In the meanwhile, operators of Kansas and Missouri are working full time. All lines are moving fairly well though Cherokee nut and one or two other grades have shown signs of weakening, rather than gaining strength.

PORTLAND, ORE.

Labor troubles in both Colorado and British Columbia affecting the Pacific Coast markets. Removal of import duties will not change the situation locally.

Owing to the strike in British Columbia Utah mines are now shipping coal into Seattle, 2500 tons having been forwarded into that city since the opening of the season. Heretofore, Seattle has drawn its coal supplies largely from the British Columbia mines. The Washington mines are shipping coal into British Columbia cities and some even finds its way into Alaska. As a result of the strike in the Colorado mines, the car situation is easier here than for some time and no trouble is now experienced in getting coal from Utah or Wyoming. Receipts are lighter this month than they were during September. Local business is a little quiet for the time being, but has been good for several weeks past. Prices have shown no change during the month.

It is reported that 900 tons of coal will arrive here soon on a vessel from Australia. Dealers do not regard the removal of the 45c. per ton duty on coal as affecting values here this season at least, owing to the high freight rates, but it may be of some consequence next year.

COAL FREIGHT DECISIONS

Sheridan Chamber of Commerce vs. Chicago, Burlington & Quincy et al.

Rehearing. The original hearing dealt with rates on coal from Sheridan, Wyo., to destination on the Chicago & North Western in Nebraska and South Dakota, on the Chicago, Milwaukee & St. Paul in South Dakota, and on the Northern Pacific east and west of Billings, Mont. Upon the rehearing the Big Horn Collieries Co., Owl Creek Coal Co., and Board of Railroad Commissioners of Montana were granted leave to intervene. The first two ask that the rates from mines near Kirby, Wyo., be adjusted so as to bear a proper relationship to rates established from Sheridan to destinations in the three cases under consideration. **Held:**

Sheridan coal should move to points upon the Chicago & North Western and the Pierre, Rapid City & Northwestern herein involved at the same rate enjoyed by Hudson. Proper routing for coal moving from Sheridan to these destinations is prescribed.

Joint rates should be established from Kirby to destinations on the Chicago & North Western and the Pierre, Rapid City & Northwestern herein involved no higher than \$1 above the rates prescribed from Sheridan.

For distances within 500 miles of the point of origin joint rates should be established from Sheridan to points on the Northern Pacific east of Billings not more than 40c. over those prevailing from Red Lodge, and to points west of Billings 55c. over Red Lodge, and from Kirby to points on the Northern Pacific east and west of Billings joint rates should be established not more than 65c. over the prevailing rates from Red Lodge. To points between 500 and 600 miles from Sheridan the differentials suggested as compared with rates from Red Lodge should be decreased 10c., and for each 100 miles additional a further reduction of 10c. should be made in the differential.

It is possible for a carrier to discriminate unjustly and unlawfully against a point which it does not reach over its own rails.

The difference in cost of production cannot be recognized as a basis for the adjustment of freight rates between different localities.—(28 I. C. C., 250.)

FOREIGN MARKETS

GREAT BRITAIN

Oct. 24—The market maintains a firm tone for admiralty list coals, which are well booked for prompt shipment. Ordinary Monmouthshire large coals are still plentiful. Best Cardiff smalls are in better demand, and inferior classes freely offered at cheap prices. Quotations are approximately as follows:

Best Welsh steam.....	\$4.68@4.80	Best Monmouthshires.....	\$3.96@4.00
Best seconds.....	4.44@4.62	Seconds.....	3.72@3.90
Seconds.....	4.26@4.44	Best Cardiff smalls.....	2.52@2.60
Best dry coals.....	4.32@4.56	Seconds.....	2.34@2.46

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport; both net, exclusive of wharfage, and for cash in 30 days.

British Exports—The following is a comparative statement of British exports for August and the first eight months of the last three years, in long tons:

	August		8 Months		
	1912	1913	1911	1912	1913
Anthracite.....	237,015	254,811	1,762,204	1,770,490	2,189,491
Steam.....	4,439,596	4,467,111	34,735,081	32,810,201	39,755,473
Gas.....	963,176	996,158	7,743,871	7,755,023	8,583,712
Household.....	154,705	175,022	1,098,581	1,146,393	1,335,833
Other sorts.....	283,067	304,078	2,278,953	2,268,316	2,653,279
Total.....	6,077,559	6,197,180	47,618,690	45,750,423	54,517,788
Coke.....	97,679	125,357	711,697	680,713	838,055
Manufactured fuel.....	125,373	179,041	1,236,582	1,115,631	1,542,365
Grand total....	6,300,611	6,501,578	49,566,969	47,546,767	56,898,208

NATAL

The British Trade Commissioner for South Africa furnishes in the "Board of Trade Journal" the following data regarding the coal industry in Natal for 1912:

The output of coal from Natal collieries in 1912 was 2,472,100 long tons as compared with 2,394,200 tons in 1911 and 2,296,700 tons in 1910. The total for 1912, although more than in former years, is not considered satisfactory in view of the number of collieries producing and the markets which may be considered as within the sphere of Natal's trade. The increase of exports to Cape ports is more than sustained, and whereas in 1911 the amount sent to Union ports was 270,300 tons, that of 1912 totalled 403,000 tons.

COAL SECURITIES

The following table gives the range of various active coal securities and dividends paid during the week ending Nov. 1.

Stocks	Week's Range			Year's Range	
	High	Low	Last	High	Low
American Coal Products.....	..	..	80	87	80
American Coal Products Pref.....	..	..	105	109 ¹	102 ¹
Colorado Fuel & Iron.....	29 ¹	27 ¹	27 ¹	41 ¹	24 ¹
Colorado Fuel & Iron Pref.....	..	..	155	155	150
Consolidation Coal of Maryland.....	..	..	102 ¹	102 ¹	102 ¹
Lehigh Valley Coal Sales.....	210	200	210	..	..
Island Creek Coal Com.....	47	46 ¹	46 ¹	53 ¹	47
Island Creek Coal Pref.....	84	83 ¹	83 ¹	85	80
Pittsburgh Coal.....	20 ¹	20 ¹	20 ¹	24 ¹	14 ¹
Pittsburgh Coal Pref.....	90 ¹	89 ¹	89 ¹	95	73
Pond Creek.....	19 ¹	19	19	23 ¹	16 ¹
Reading.....	164	159 ¹	160 ¹	171	151 ¹
Reading 1st Pref.....	85	85	85	92 ¹	82 ¹
Reading 2nd Pref.....	86	85	85	95	84
Virginia Iron, Coal & Coke.....	..	..	42	54	37
Bonds	Closing		Week's Range		Year's Range
	Bid	Asked	or Last Sale	..	..
Colo. F. & I. gen. s.f.g. 5s.....	93 ¹	95	96	96	93 ¹ 90 ¹
Colo. F. & I. gen. 6s.....	104	106 ¹	107 ¹	June '12	..
Col. Ind. 1st & coll. 5s. gu.....	79 ¹	Sale	79 ¹	80 ¹	77 ¹ 85
Cons. Ind. Coal Me. 1st 5s.....	..	..	76	Aug. '13	76
Cons. Coal 1st and ref. 5s.....	..	92 ¹	93	Oct. '12	..
Gr. Riv. Coal & C. 1st g 6s.....	..	..	102 ¹	April '06	..
K. & H. C. & C. 1st s f g 5s.....	91	..	91	91	91 98
Pocah. Con. Coll. 1st s f 5s.....	86	Sale	86	86	85 87
St. L. Rky. Mt. & Pac. 1st 5s.....	78	79	78	Oct. '13	73 80
Tenn. Coal gen. 5s.....	..	98 ¹	97 ¹	97 ¹	97 ¹ 103
Birm. Div. 1st consol. 6s.....	100 ¹	Sale	100 ¹	100 ¹	100 ¹ 103
Tenn. Div. 1st g 6s.....	100 ¹	Sale	100 ¹	100 ¹	99 102
Cah. C. M. Co. 1st g 6s.....	..	..	103	July '13	103 103
Utah Fuel 1st g 5s.....	..	..	80	..	..
Victor Fuel 1st s f 5s.....	..	94	93	May '13	79 ¹ 80
Va. I. Coal & Coke 1st g 5s.....	92 ¹	94	93	Oct. '13	92 98

DIVIDENDS

Lehigh Col & Navigation Co.—Regular quarterly dividend of 2%, payable Nov. 29, to holders of record Oct. 31.